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MOTOR AGE

FOR AUTOMOTIVE SERVICEMEN



A CHILTON PUBLICATION

DECEMBER 1941

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Brake Relining

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Basic Course
for Mechanic
Training

By J. Edward Ford

•
And Hundreds of Other
Helpful and Profitable
Ideas



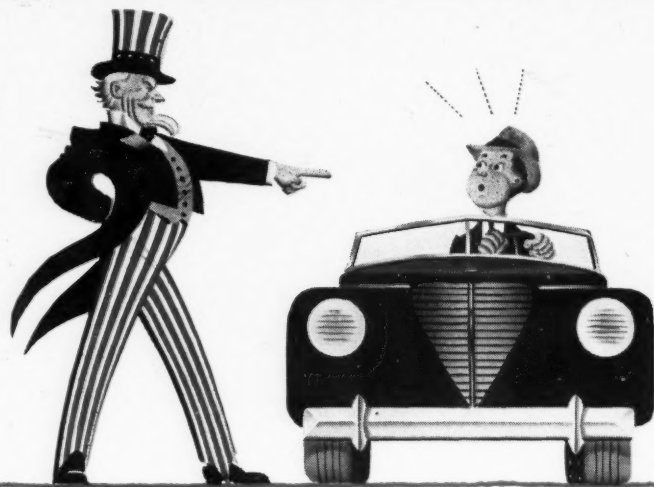
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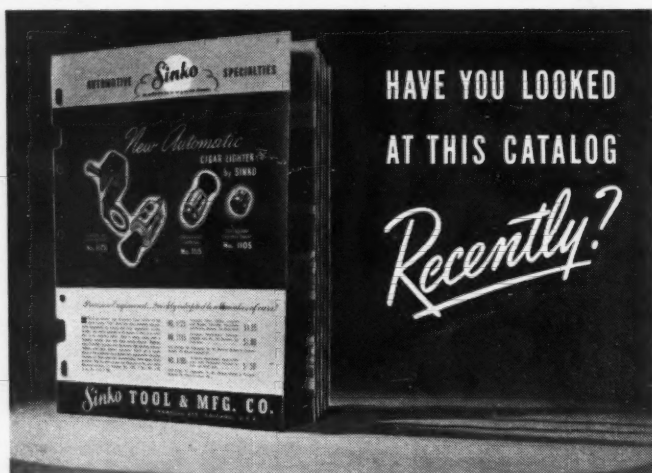
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MOTOR AGE

With Which is Combined AUTOMOBILE TRADE JOURNAL

FOR AUTOMOTIVE SERVICEMEN

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MOTOR AGE

DECEMBER 1941

Get the Jump

With the armed forces and the defense industries drawing heavily on repair shops for trained men, one of the many problems of operating a shop is getting skilled mechanics to do the work. To get the jump on your competition, use MOTOR AGE to help you in training your young mechanics to take the place of the men who have left your employ. To further help you in this problem, a special series of articles starts in this issue, which is especially designed to help you teach your men the fundamentals of maintenance. The articles will also act as a "refresher" course for the older men.

Parts

Production of light trucks for civilian use in January, 1942, will be curtailed 35.9 per cent below output in the same month this year by an order of Priorities Director Nelson. At the same time Mr. Nelson issued orders extending from Dec. 31 to Jan. 31 the replacement parts program for passenger cars and light trucks. This later order, therefore, provides that a producer of spare parts for passenger cars and light trucks may make during January one-third of the parts sold by him for replacement purposes during the period Jan. 1941 to March 31, 1941.

Methanol

Just what effect the recent order of OPM imposing additional control on alcohol (methanol) will have on anti-freeze is difficult to predict at this time. The new control was designed



SHOP TALK

By

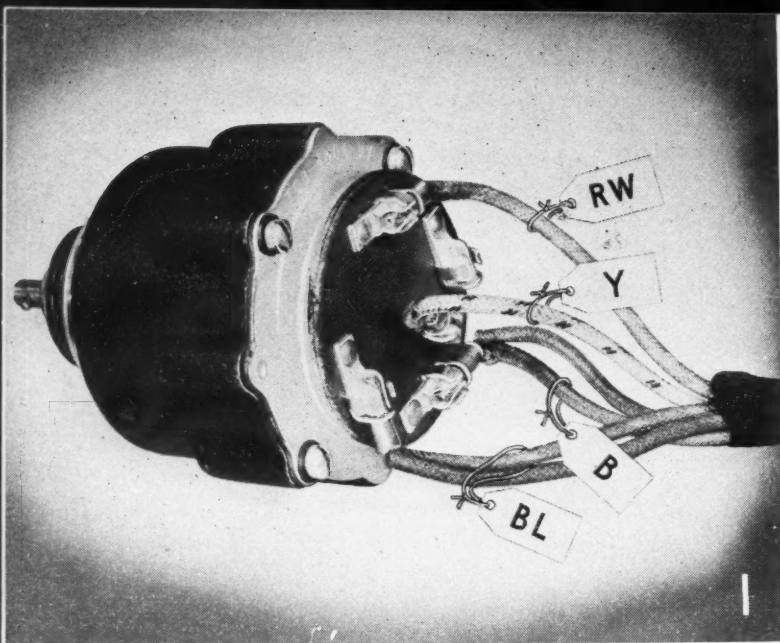
Bill Toboac

to increase the flow of alcohol into the manufacture of plastics. The OPM states that this step has the effect of preventing the delivery of methyl alcohol for anti-freeze and other purposes until and unless the higher rated needs have been taken care of.

Worriers

With the Ickes alleged shortage of gasoline a thing of the past, deputy Coordinator Davies states that the

margin of safety in domestic supplies is being narrowed by defense demands and that for past three years, oil has been taken from the ground at a more rapid rate than new pools were being discovered. Inasmuch as some people have been worrying about the depletion of our petroleum reserves for at least the last 20 years, and there is always plenty more, I for one refuse to worry and hereby assign the job of worrying to Messrs. Davies and Ickes.



BEFORE you have a chance to become familiar with the design and operation of the new Hudson Drive-Master, you may be called upon to make some adjustments to the control system to correct faulty operation. It is with this thought in mind that we present here some trouble-shooting hints that may help in making minor adjustments.

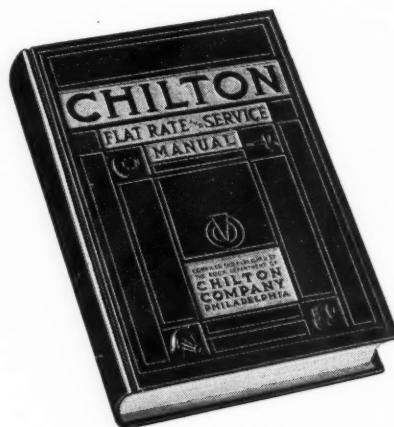
Control Button Operation

Improper operation of the instrument switch buttons may bring out objectionable operating conditions which appear to be mechanical troubles. These conditions can be avoided if changes into or out of "HDM" are made only with the engine running, but with the accelerator released and with the Handy Shift lever in neutral. The engine may be used as a brake by first depressing the "Off" button, and then going into Drive-Master by pushing the "HDM" button. A few words of instruction to the car owner will eliminate the conditions brought about by improper operation of the control buttons.

Proper Connections

If for any reason it should become necessary to remove the wires connected to the governor, care must be exercised to be sure that they are reconnected to the proper terminals. Since the wires may be dirty or oil-soaked so that it is difficult to identify their color markings, it is wise to identify them before removal by attaching small tags with the proper color symbols

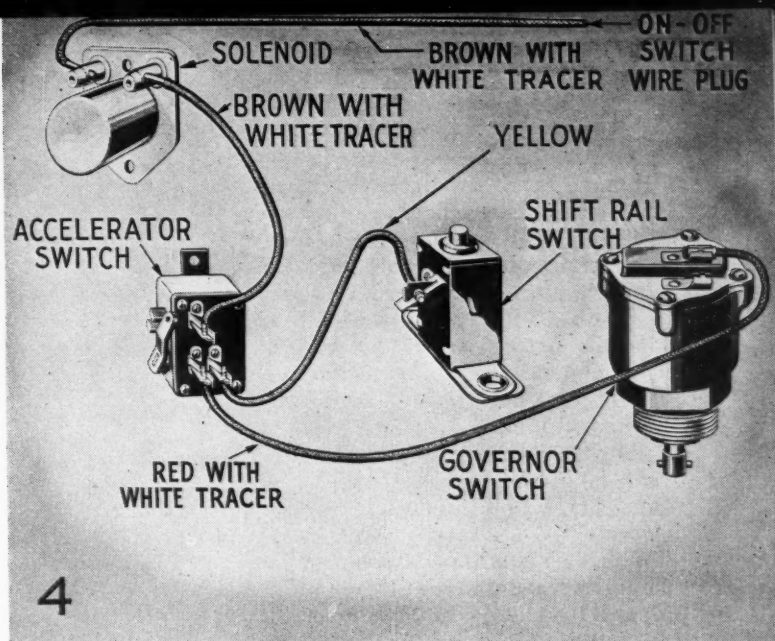
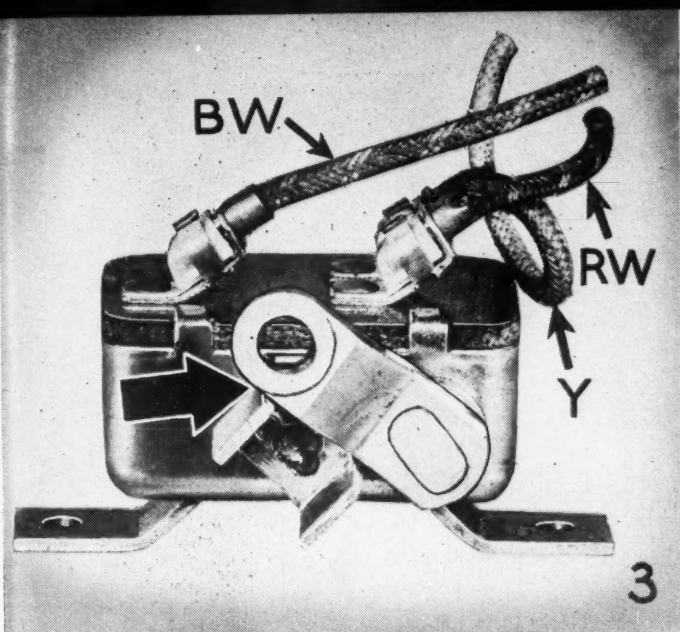
SERVICE HINTS ON 1942 HUDSON DRIVE-MASTER



The mechanical procedure in this and other articles in Motor Age supplements the Service Section of the Chilton Flat Rate and Service Manual, the book used by 26,000 maintenance shops.

Photographs courtesy Hudson Motor Car Co.

Here is a timely article showing how to make minor adjustments on this new transmission control unit



as shown in illustration No. 1. The color coding of the wires is marked on the governor cover just under the terminals. The code "RW" means red with white tracer; "Y" is yellow; "B" is brown; "BL" is blue. The terminal not used in this illustration is marked "R," and is for use only on cars equipped with overdrive. Its wire color is red.

Clutch Operates While Coasting

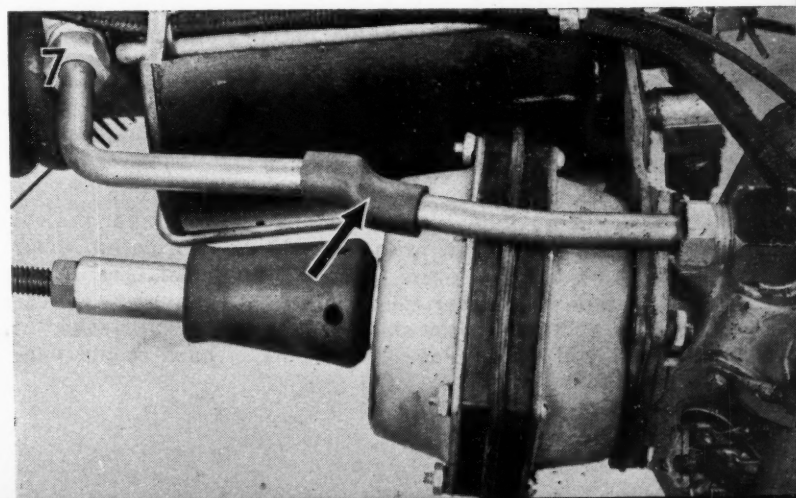
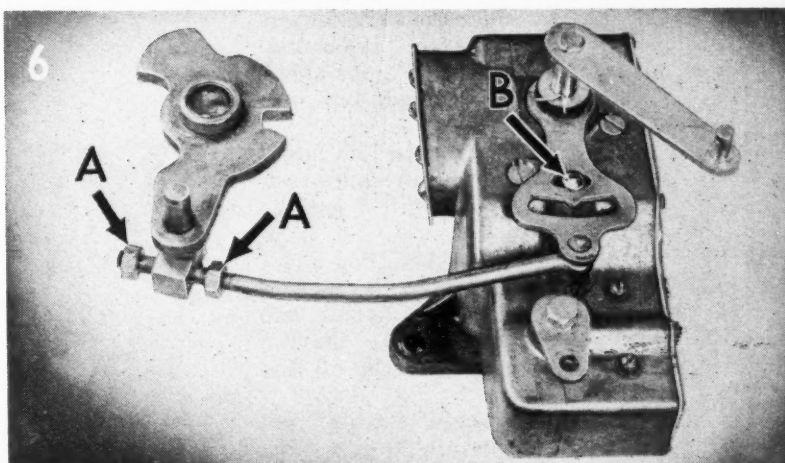
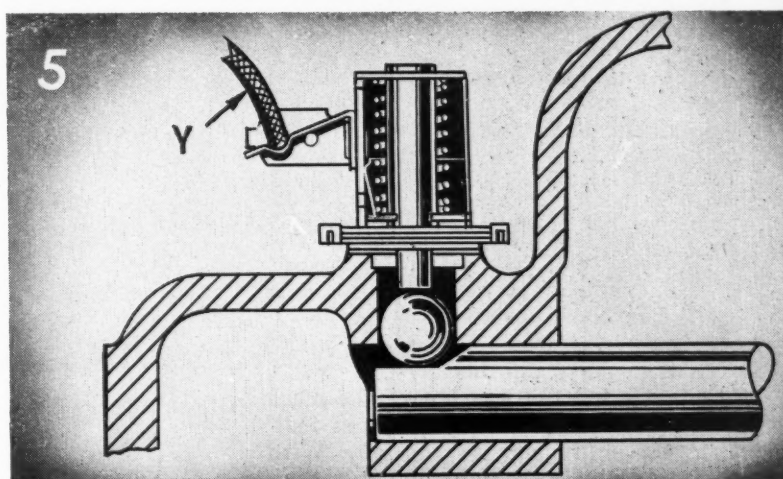
Alternate engagement and disengagement of the clutch when coasting in high gear above 20 miles per hour is caused by the lock lever spring (indicated by arrow in illustration No. 2) being broken, disconnected, or missing entirely. Check to be sure it is not broken, and that it is connected to the lever at the top and to the clip at the bottom.

Clutch Fails to Release

This condition can be caused either by a faulty accelerator switch, illustration No. 3 (mounted on the engine water jacket cover), failure of the accelerator linkage to return solidly against the stop on the accelerator switch, as indicated by the arrow in illustration No. 3, or by faulty contacts in the governor mounted at the rear of the transmission on the right side and which controls the Vacuum Drive operation. See No. 4.

To test the accelerator switch, disconnect the rod at the switch lever, disconnect the red-with-white tracer wire and the yellow wire, and ground the terminal to which

(Continued on page 66)



POP O'NEILL, a big, hearty man with a shock of white hair, was in the office, opening the morning mail, when Chuck Masters came in half apologetically. Chuck was a willing kid Pop had hired out of vocational school four months before when he caught Jim, one of his regular mechanics, reading the help-wanted ads in the Glenrock Times.

"I guess we'll have to put a new rear main bearing in that '40 job that just came in," said Chuck gravely.

The seriousness with which Chuck always announced his opinions amused Pop but he never let the kid suspect it.

"New rear main, eh," he said. "Sure of it?"

"Well," said Chuck, "I let the engine turn over pretty fast for half an hour and the paper I put underneath was soaked with oil. When I ran it on the lift to take a look, the oil was dripping out of the rear."

"For a guess," said Pop, getting to his feet, "the rear main sounds all right. But we ain't on a quiz program, Chuck. We're in the repair business. We can't guess. Let's have another look."

He led the way out of the office and down past the line-up of testing equipment to the pit. With movements faster and surer than those of many men half his age, Pop ducked under the lift. He was back in half a minute. "It's comin' out all right," he said, "gobs of it."

Chuck looked pleased, but only for a moment.

"What we've got to do now," said Pop, "is make a pressure test. You drop the pan while I get the stuff together."

When Chuck finished, Pop had a two-gallon tank alongside the car, with an air line attached to one side and copper tubing leading from the other side to the oil line of the engine.

"This is somethin' I hadn't got around to explainin'," said Pop. "It's what we call an air-pressure test. This tank is half full of thin oil. When I turn this valve here, the compressed air will run the pressure up to about 70 pounds. That's enough to force it through the lubricatin' system and we'll be able to see just where this leak is." He turned to face the wash rack. "Hey, Snow White!"

The colored lad who did the washing shuffled over.

"Climb in the car when I let it down and step on the starter when I tell you," said Pop. "Now," he

said to Chuck when the car had been lowered and raised again, "let's see what's happenin'."

Being so early in the morning, Chuck's face was still clean enough for Pop to see it turn red. The oil was not coming from the rear main bearing but from the rear camshaft bearing.

"That's what I was afraid of," said Pop. "You've always got to watch for it on these full pressure-lubricated jobs." He raised his head. "O. K., Snow White, that's enough." He turned to Chuck.

"Oil leaks," he said, "are as hard to put your finger on as the

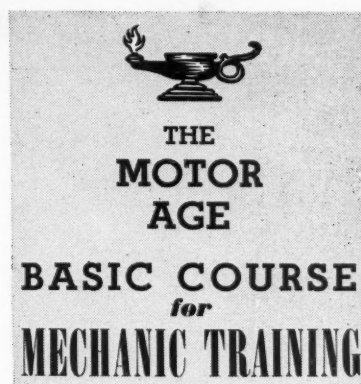
meanin' in a politician's speech. This one's awful tough unless you're careful."

"I could have sworn that oil was leakin' from the rear main," said Chuck.

"Naturally. That's where you saw the oil when you looked at it the first time. It got there by runnin' down the rear wall of the crankcase from the crankshaft bearing."

"Then we'll have to replace the bearing on the camshaft?" said Chuck.

"I doubt it. The trouble's probably in the cover plate. You see



Pop O'Neill explains to a young beginner some finer points of spotting engine oil leaks and curing them

By J. Edward Ford

THE ENGINE



Pop was amused at Chuck's seriousness, but he did not let the kid suspect it. "New rear main, eh," he said. "Sure of it?"

OIL LEAK PUZZLE

this plate over the end of the bearing? From the way it looks, I'd say the gasket was defective. Sometimes you'll get a leak here because the cap screws don't hold the plate right against the case or because the plate itself is defective. In some jobs, the end of the bearing is sealed with a plug and that can spring a leak."

Chuck was beginning to look relieved. "Then all I got to do is put in a new gasket."

Pop gave one of those short, friendly laughs that had helped win him so many loyal customers in Glenrock. He led the way out

from under the lift, Chuck followed.

"If you don't think that remov- in' the flywheel is any trouble," he said, "then it's going to be easy. You've got to do that, you know, before you can replace the gasket. And while you're doin' it, don't forget to check the length of the cap screws of the cover plate and the depth of the holes. You've got to be sure they ain't bottoming."

"I guess I still got lots to learn," said Chuck.

"Any automobile mechanic has," said Pop encouragingly. "You're doin' swell. I just took this trouble because I want you to get the right

habits. Oil leaks are tricky. You can break your heart over some of 'em."

"But I know a lot more about findin' 'em now," said Chuck.

"That's only part of the game. Take the rear main bearing you were so sure about. Most of the time a rear main leaks because a poor fit or wear gives it too much clearance. You just install a new bearing."

"But Jim said —" began Chuck.

"I know what Jim says," broke in Pop. "At least I know what he says when I'm not around. He's

(Continued on page 74)



NEW YEAR'S RESOLUTIONS

**Make your shop so attractive
that women drivers will not
be able to resist its appeal**

Suggests **ROSE LU GOLDMAN**

WHAT happens to all the New Year's resolutions we hear so much about *before* New Year's? Does the cold light of day on Jan. 1—that morning after of all mornings after—drive them from our pounding memory? Or is it be-

cause we don't consider New Year's resolutions practical?

We must admit that many resolutions are trivial. Others reach too high. If a man breaks a resolution to stop reading the newspaper at the breakfast table, the heavens

aren't going to fall. And, if he fails to carry out his resolution to make a million dollars—well, he's got lots of company.

On the practical side, there are many resolutions the serviceman can make. And not only make but keep, to his profit. As a woman who buys a share of automotive service, the resolution I'd like to see servicemen make is this:

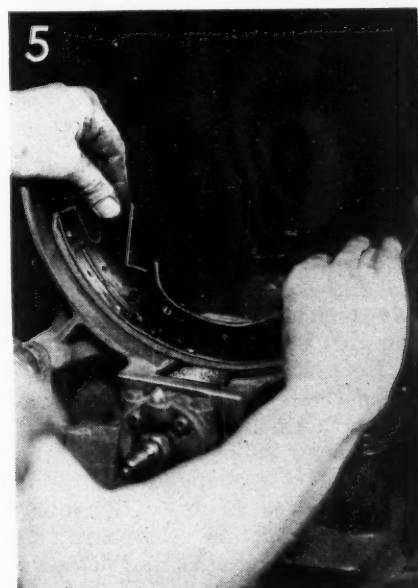
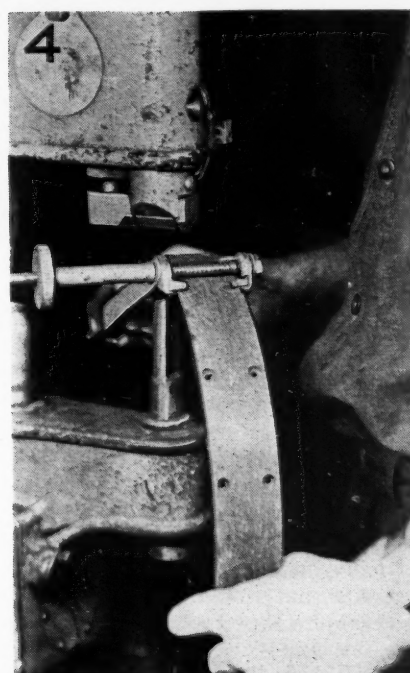
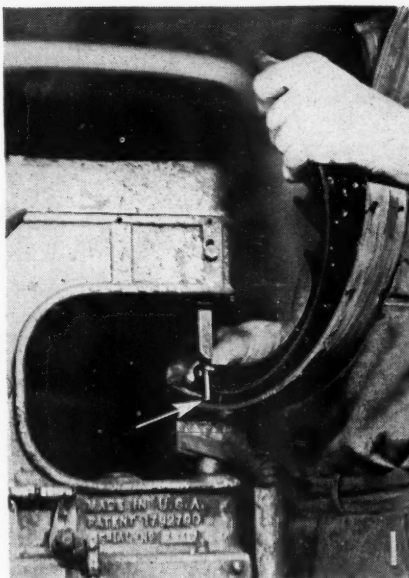
"Resolved: That I will make my service shop as attractive as possible to women customers, so that my shop will get its rightful share not only of the growing volume of service business but also of the greater proportion now being bought by women."

It is not generally realized how greatly defense has emphasized the woman's place in the service picture. With thousands of reserve officers being called up, the wives of these men must shoulder all the responsibility for keeping the family car in repair. The same job must be assumed by the wives of defense workers who have migrated temporarily to other towns, leaving the family behind, and the wives of defense workers who are putting in such long hours in plant and shipyard that they have no time to attend to having the family car serviced. Besides, thousands of women are engaged in voluntary defense work, using their own or the family car to get around in. They are thus becoming more familiar with the service needs of the car and with service shops.

There are several ways for a serviceman to make his shop attractive to women customers. I've stressed the importance of neatness and cleanliness time and again, and these things are just as important as they ever were. The average woman's workshop—that is, her kitchen—is trim and spotless. She finds it hard to understand why a serviceman can't at least try to keep his shop the same way.

Now that service business is definitely on the up grade, it should be possible for many shops to engage an attractive receptionist. No shop can be expected to pay a girl simply to greet customers, but that duty is only one of many the girl can perform. She can act as cashier, deliver finished cars to customers, answer the telephone and even keep books and write letters. But, however helpful the girl may be in

(Continued on page 64)

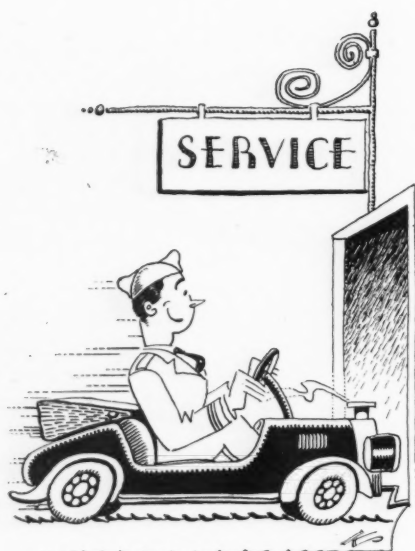


BRAKE RELINING

If braking area of 100 per cent is to be obtained when the shoes are placed on car, applying new lining calls for precision workmanship

1. Punch out the old rivets and remove the lining. Clean the shoe and paint it to restore new appearance.
2. Use a lining stretcher to insure getting the lining tight. Install rivets in one end before using stretcher.
3. Although the lining is already drilled for rivets, run the drill through lining and shoe to insure alinement.
4. Rivets installed with a power riveter insure that the lining will be securely fastened and will not creep.
5. Grind the lining after it has been installed on the shoe to remove high spots and insure full drum contact.

CUSTOMERS IN KHAKI



CAN you imagine long queues of service-hungry cars lined up before the doors of your shop, with every owner demanding prompt and extensive repairs? Have you ever dreamed about the profits that would roll in if enough customers kept storming your doors to let you, if you wished, enlarge your floor space, buy all the equipment you needed, and double your force of mechanics?

It is just possible that you have envied shops that happen to be located close to some defense boom town, imagining that the sudden influx of workmen or troops would transform the community into a land of plenty. If you have, it may make you more contented with your present lot to know how shops are faring near Indiantown Gap, Pa., site of one of the Army's big new camps.

Here, until a year ago, farmers tilled their fields and took their cars, trucks, and tractors to the village repair shops for service while the owners exchanged countryside gossip. Then suddenly Indiantown Gap changed. A clapboard city sprawled over the rolling fields and the fertile soil was kicked into dust

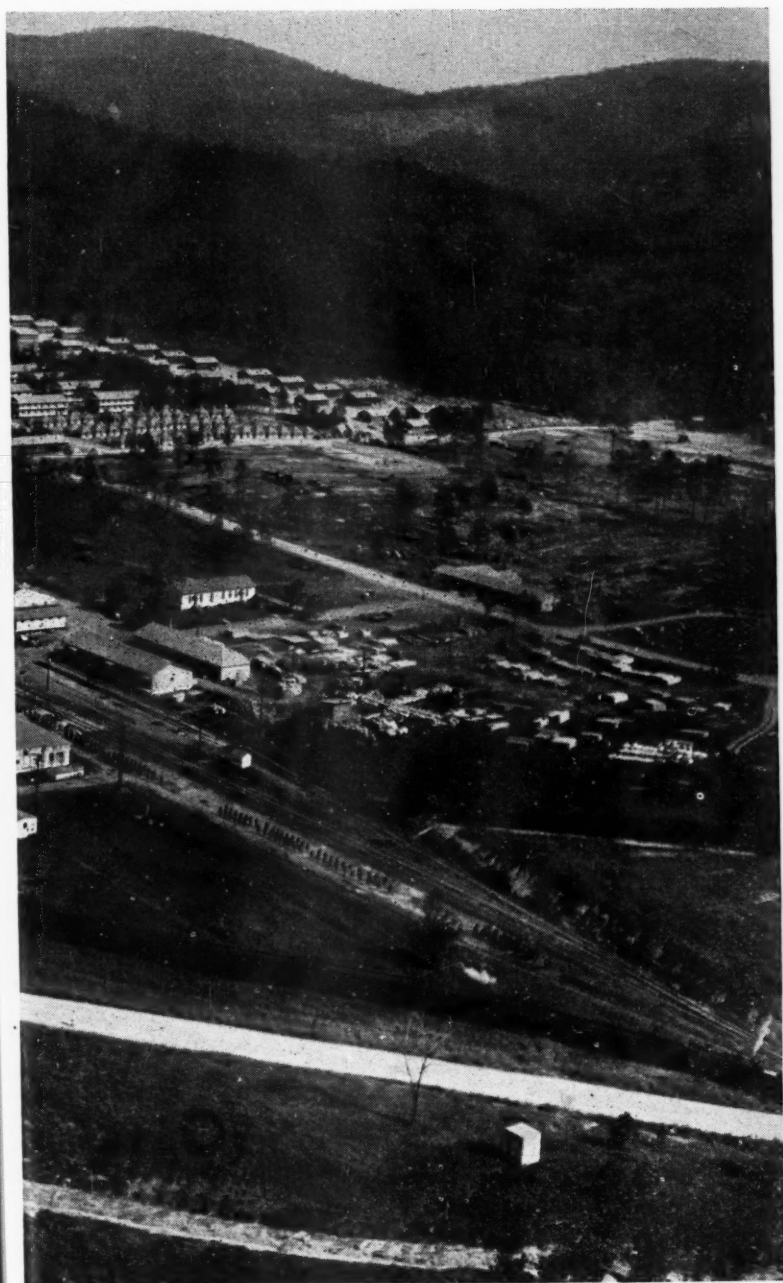
by 20,000 pairs of marching feet. And, of more importance to repair shops in the area, officers, National Guardsmen, and draftees arrived with 3000 personal cars.

Shops at Palmer, Ono, Jonestown, and Lickdale, Pa., all in the vicinity of the camp, were overwhelmed with business. Those with capacity

for two or three cars were asked to service dozens. Some shops put on an extra man or two, but they could not afford to expand otherwise; there was no certainty how long the camp would exist. The result was that every shop in the area was forced to decline business for the sufficient reason that it could not



Service near a big Army camp is half profit, half headache



handle it with existing facilities.

Occasionally, a shop has turned its back on a job because it did not care to tackle a car with which it was not too familiar. In such an area, most of the cars serviced ordinarily are light, but many of the officers, called to service from successful civilian occupations, brought

along Cadillacs, Packards, and other big cars. One officer turned up with an old Dusenbergs.

In some ways, servicing cars for Army men was no different from any other kind of service, provided they were officers' cars, but in other ways it called for tact and an extremely even temper.

"Some Army officers get so used to giving orders," complained one serviceman, "that they forget they're off the reservation. They come in demanding this and demanding that. They want their cars in an hour. If we can't drop everything instantly they drive up the road to the next shop."

Other shops have no complaints at all, and officers' business is welcomed. Even if it does not include so much body work as some shops would like, it is extensive. One serviceman said he was surprised by the number of engines he had been asked to rebuild for officers. His guess was that Army men, being close to defense preparations, are not counting so heavily as civilians on being able to get new ones.

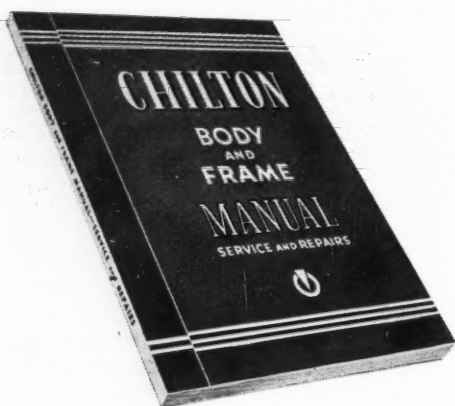
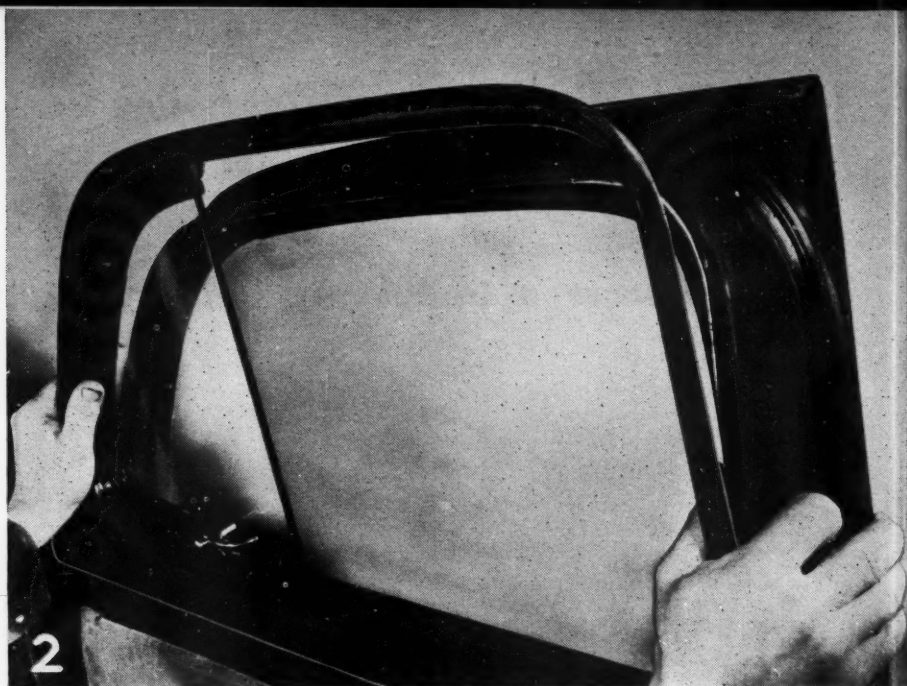
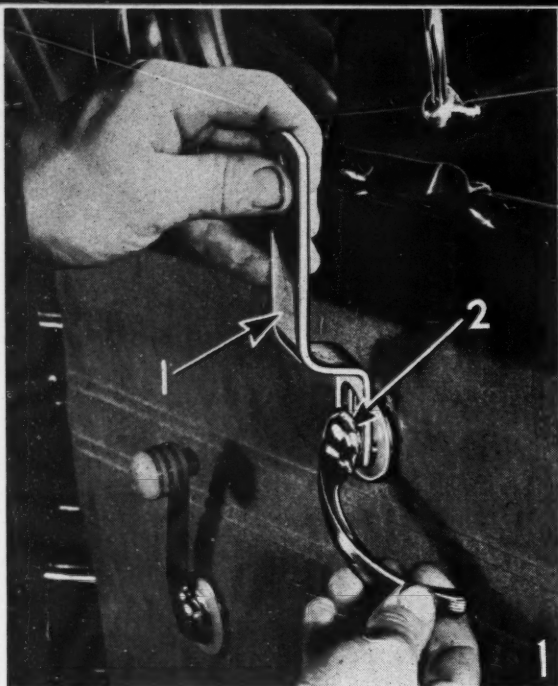
As in everyday business, doing a good job has its rewards. One satisfied officer tells another at the camp and a shop able to handle more business gets it automatically. A shop that does body work ironed out two fenders for a captain just before he was transferred to a Virginia camp. While he was driving south, another car crashed into him amidship. He sent the car back more than 100 miles to the shop that had done the fender work.

When a shop starts to do work for the privates, it gets into a more complicated business. The cause of the trouble is the hoary tradition that a fighting man is not to be paid too much money. Trying to buy and then maintain an automobile on \$21 or \$30 a month has headaches, not only for the soldier but for the repair shop as well.

The trouble starts before a draftee leaves for camp. He wants a car to drive home when he gets leave and, often as not, the car he buys is one that is fast losing ground to the junk man. At camp, he is not allowed to park it on the reservation, so he leaves it in any convenient field or along the road. After a time it needs service, and usually plenty of it.

"I just want you to fix it so it'll run," he tells the repairman airily.

(Continued on page 58)



This article, and others in Motor Age, supplements the service information incorporated in the Chilton Body and Frame Manual.

WINDOW REGULATOR

REMOVAL

Simple procedure for speeding this work on a 1941 Plymouth

REMOVING the door window regulator assembly involves the following procedure:

Roll the window glass all the way down.

Press the escutcheon plate around the regulator handle and the inside door handle against the trim panel, to uncover the pin which holds the handle to the shaft.

Push out this pin, as shown in Fig. 1, and remove the handle.

Remove the garnish molding screws, and pull the molding away from the door at the top. Lift the molding up, and remove, as in Fig. 2.

Remove the screws which extend through the trim panel.

Pry the panel away from the door frame, unsnapping the con-

cealed wire fasteners, as shown in Fig. 3. These fasteners are found on both sides of the panel, and across the bottom. On some models there is a fastener in the center of the panel. Remove the panel.

Remove the glass run channel from the door reveal.

Remove the retainer washer lock wire from the front and rear lift arms, as shown in Fig. 4. (A small wire hook may be used for removing the lock wire.) Then remove the washers from each regulator arm.

Unlock the regulator arms from the glass lower channel, and raise the glass up about 4 in.

Remove the glass as shown in Fig. 5, by tipping it toward the front of the car until the glass run

roller at the front of the glass assembly can be pulled through the enlarged opening at the rear of the window opening.

Remove the adjustment bolt and washers, as in Fig. 6.

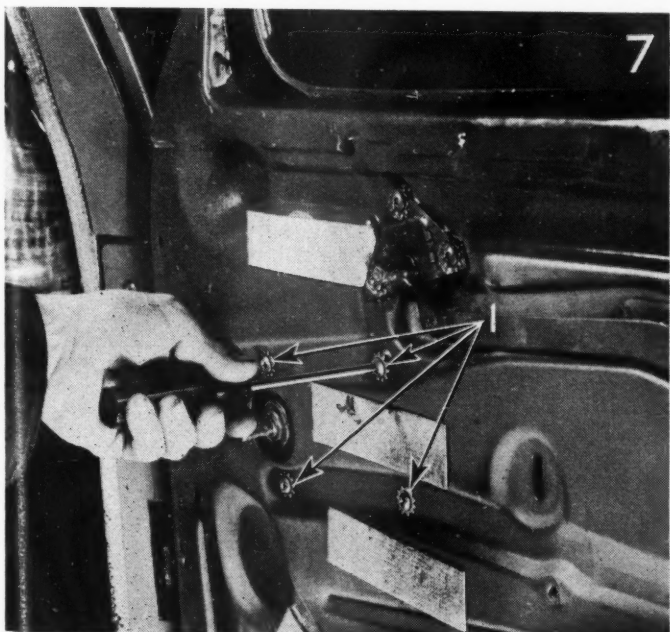
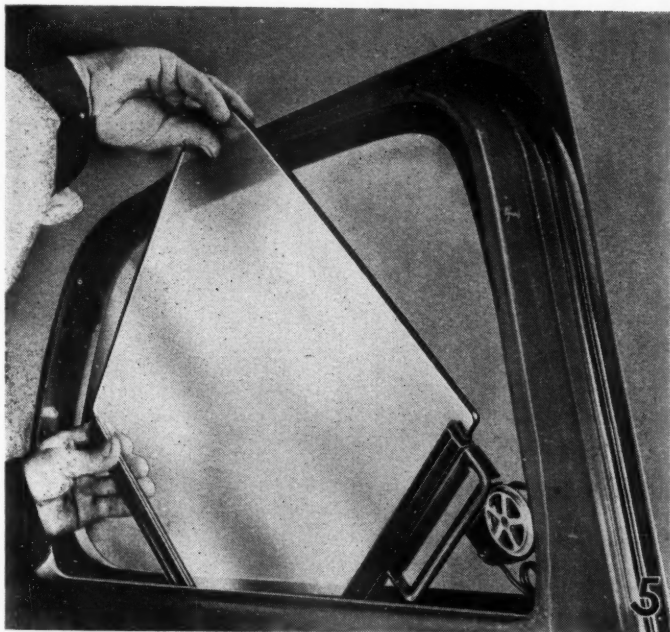
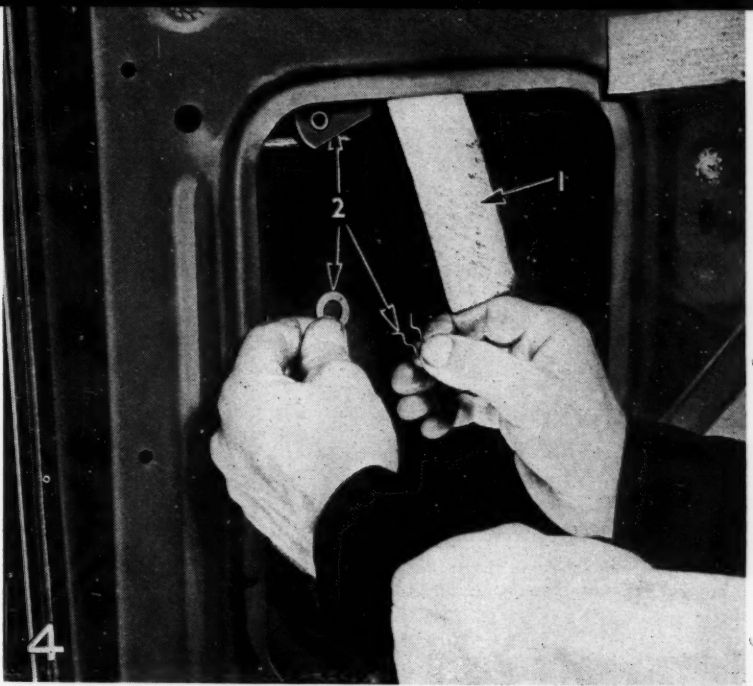
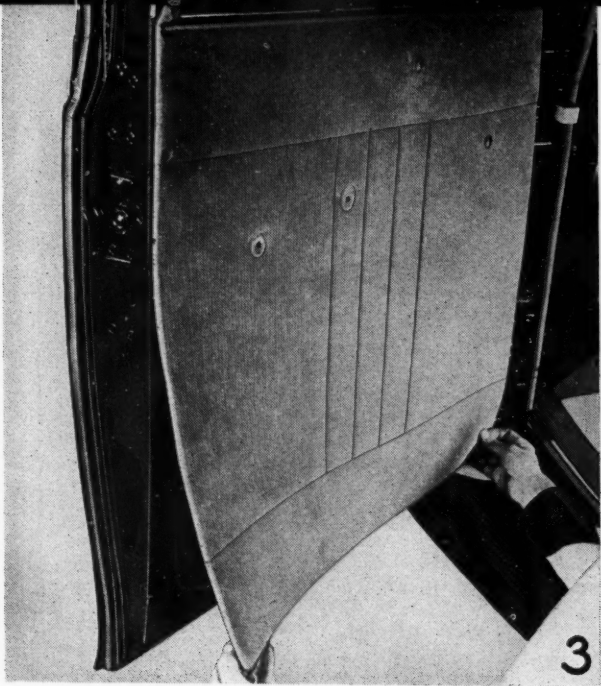
Wind the window regulator to the "up" position and unhook the attaching stud in back of the panel.

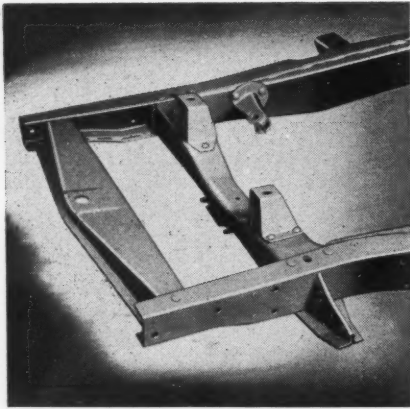
Turn the window regulator, with the crank handle, in the direction for lowering.

Unhook the regulator arm from the regulator body.

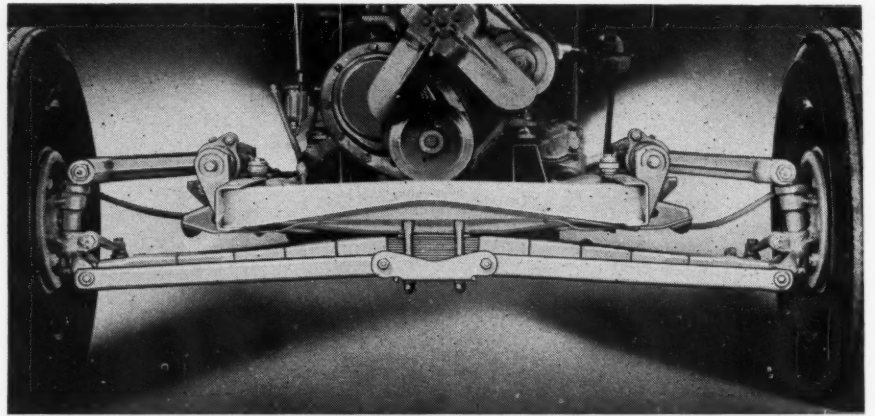
Remove the screws which hold the regulator body to the door panel, as shown in Fig. 7.

Remove the regulator assembly through the opening in the door panel, as in Fig. 8. Reverse instructions for installation of new unit.





Front of frame, showing the spring mounting bracket beneath engine support member



Note the method of attaching the front spring to the mounting bracket. Because this bracket controls the caster angle, it is important that frame straightening work be extremely accurate

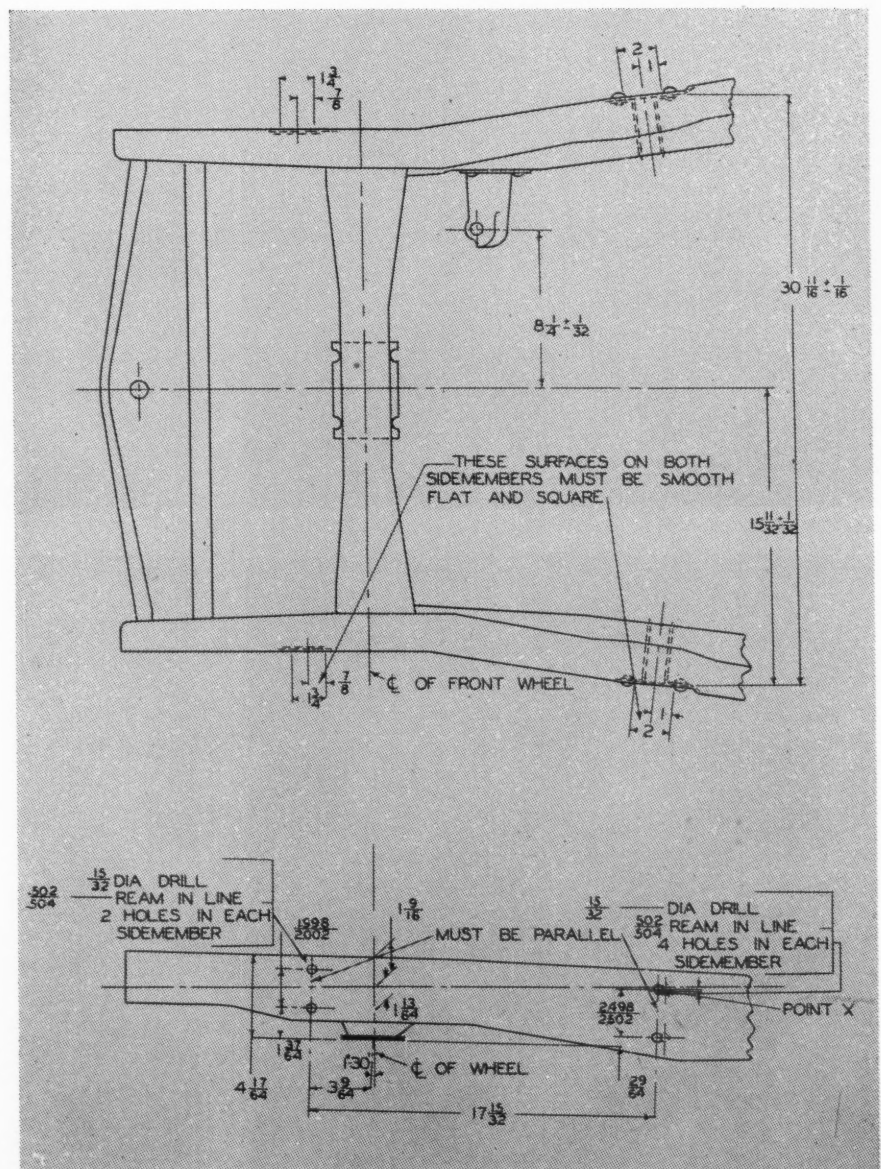
FRAME STRAIGHTENING DATA

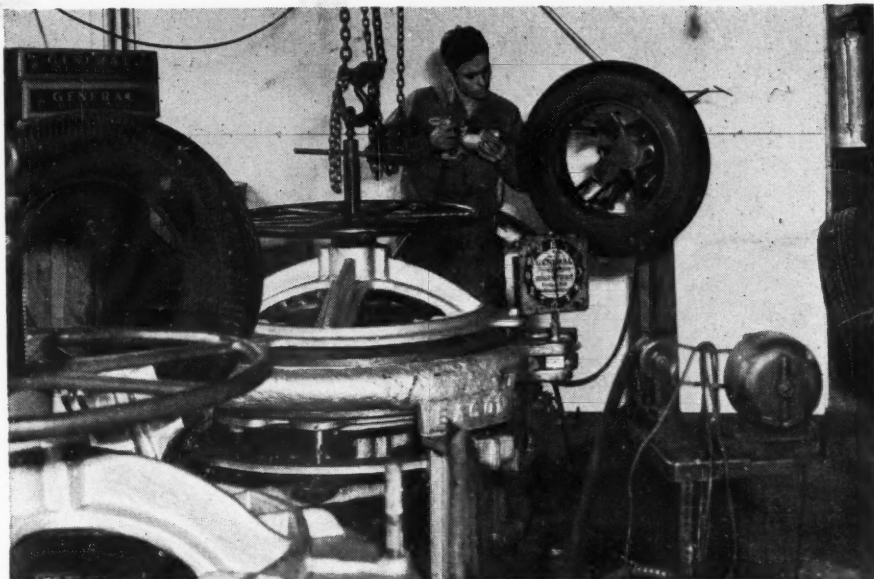
Another article designed to aid you on a frame and knee-action alignment job

SPECIAL care must be taken when straightening the front end of the frame of the 1941 Studebaker Champion, because the position of the second cross member, which carries the engine mountings, also controls the caster angle of the front wheels. The transverse spring is attached by U bolts to a plate on the underside of the cross member to provide the caster angle, which is not adjustable.

The camber angle is controlled by shims placed between the frame side rails and the brackets holding the upper control arms. It is important, therefore, that the surface of the side rail, where these brackets are attached, be flat and smooth, and square with the angle of the control arms. Camber should be checked with the car unloaded, and should be set at $\frac{1}{4}$ to $\frac{3}{4}$ degrees.

To adjust toe-in, set the left front wheel straight ahead by adjusting to left reach rod. Then tighten the clamp bolts so that the left rod will remain in that setting. Obtain the desired toe-in ($\frac{1}{16}$ to $\frac{1}{8}$ in.) by loosening the two clamp bolts on the right reach rod and turning the rod. Be sure to tighten the clamp bolts after obtaining proper adjustment.





Preparing the old carcass for retreading is important. Here's the surface being buffed to insure a good bond, uniformity, and balance.

By HARRY L. SPOONER

ONE firm that isn't doing too much worrying about the immediate future of the tire business is the Godel-Howland Co., of Peoria, Ill. This firm is prepared to take utmost advantage of the expected boom in retreading and recapping.

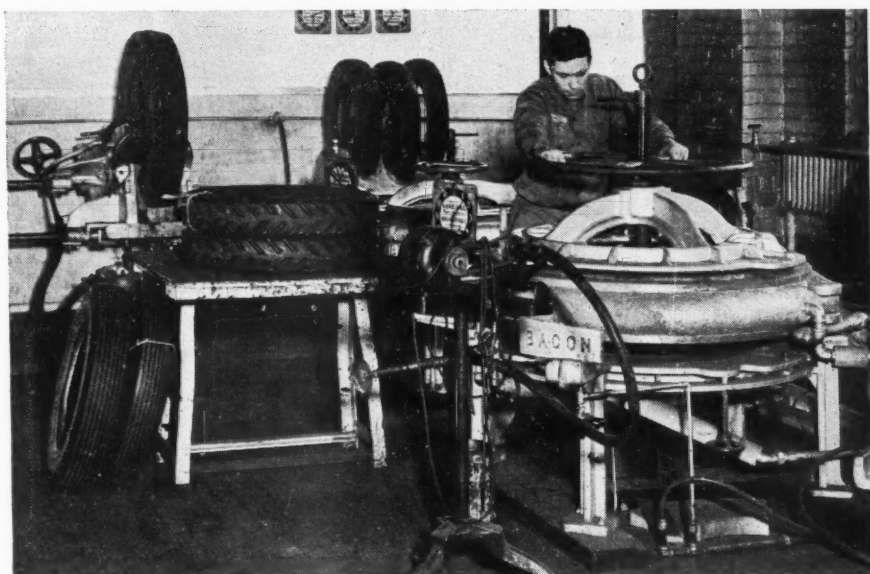
The firm was founded 23 years ago as a storage garage. The only other service it offered consisted of tire repairs and car washing. Gradually, other departments were added and the business prospered. Today, the original secondhand service car has given way to three modern service cars. Instead of the original four employees, the firm now employs 26. Yet tire sales and tire service continue to dominate the set-up, accounting for 53.6 per cent of the total dollar volume. This fact is brought out emphatically in the breakdown of the firm's service volume:

Tires	47 per cent
Retreading	5.3 per cent
Vulcanizing	1.3 per cent
Repairs	3.8 per cent
Service Calls	2.4 per cent
Gas, Oil, Lubrication..	9.5 per cent
Accessories	1.3 per cent
Car Washing	2.2 per cent
Car Storage	17 per cent
Battery Sales	7.5 per cent
Battery Rentals .....	.6 per cent
Battery Recharging ..	.9 per cent
Battery Service Calls..	.2 per cent
Testing	1 per cent

The same brand of tires has been handled ever since the firm started. At the outset, many of the sales consisted of solid truck tires. A hydraulic press was used in servicing these tires.

At the present time, the firm's tire service business is one of the largest in the Middle West. The shop has molds for vulcanizing every size tire on the road, together with molds for all passenger car sizes and truck sizes up to 9.20. The molds include those for both the conventional type of tread and the mud-and-snow tread. One of the pieces of equipment that enable the recapping department to do a first-class job is a precision buffer,

(Continued on page 75)



After the new tread rubber has been applied, the complete tire is placed in a mold where it is subjected to a temperature of about 280 deg. F., for 1½ to 2 hours, to cure.

READY FOR TIRE RETREADING

**Proper equipment and a reputation
for good work enable this shop to
meet the demand for rebuilt tires**



SUPER SERVICE

The three brothers who built up an impressive super service business from a small station that sold gasoline and repaired tires and batteries. From left to right they are Clarence, Howard and Elwood Fischer. Their modern shop appears above.

IF the case for super service needed proving, the attractive, modern and profitable shop of Fischer's Automotive Service in Philadelphia could do the trick. This operation has been demonstrating for eight years the wisdom of offering the car owner convenient, quick and complete service.

The automobile business was

just beginning its phenomenal expansion when the three Fischer brothers — Elwood, Clarence and Howard—opened a small filling station. That was in 1921. Besides selling gasoline, the station offered lubrication and battery service and repaired home radio sets, which were just then coming into use.

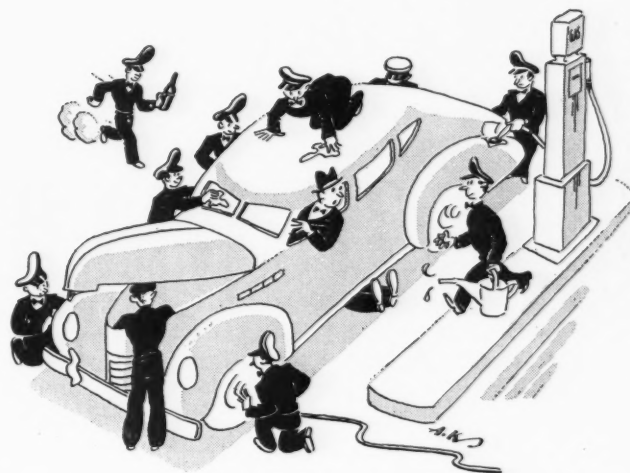
From the start, the business

prospered. Everybody seemed to be buying automobiles and buying gasoline to run them and oil and grease with which to lubricate them. But the cars also were wearing out and occasionally breaking down. When that happened, it did owners no good to stop at the Fischer station; it was not equipped for repairs. Day by day, the Fischer brothers saw old gasoline customers drive off to shops that could supply the types of service the owners needed.

The Fischer station was rebuilt to provide the required space and the variety of services offered was widened to include brake and motor work. Business grew, but the shop



Rapid growth of this exceptional shop dates from the moment of its decision to provide every service the car owner could possibly need



MEANS COMPLETE SERVICE

was still passing up a lot of jobs it could have gotten if it had been equipped to do them.

In 1933, when the depression was at its worst, the Fischer shop was doing so well that the brothers decided to go the whole hog. They built a model super service station.

The building itself is ideal for the job it has to do. Situated at the intersection of two heavily traveled streets, it is flanked on two sides by island gas pumps. The corner nearest the intersection is given over to the office and display room for tires, batteries, supplies and accessories. On either side are three wide entrance doors. Those on one side contain two lubrication lifts

and a wash rack. Those on the other side lead directly into the shop, one of them to the front-end equipment, the others back to the general repair shop.

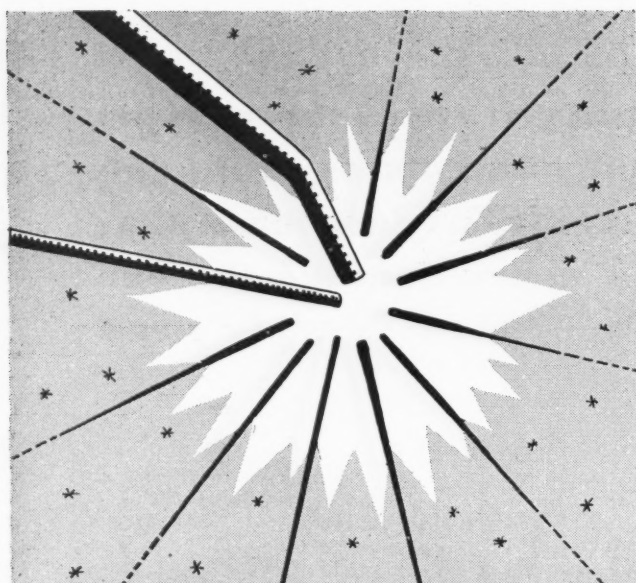
Testing and repair equipment is lined up along one wall. In the corner, along the other wall, are the valve refacer, grinders and other repair equipment.

With this set-up the Fischer shop can take care of the bulk of the work that comes into the shop. Besides the work formerly handled, it is equipped to render tire service, car washing, front-end work, including wheel balancing, motor overhauls and clutch rear axle work. It has arrangements with

shops having special equipment to take care of machine work, such as crankshaft grinding and block re-boring, as well as radiator and body work, frame straightening, painting and glass replacement. The fact that this work is farmed out does not matter to the customer. From his viewpoint, the shop offers and performs one-stop service. It saves him time and trouble, and that is what he is after.

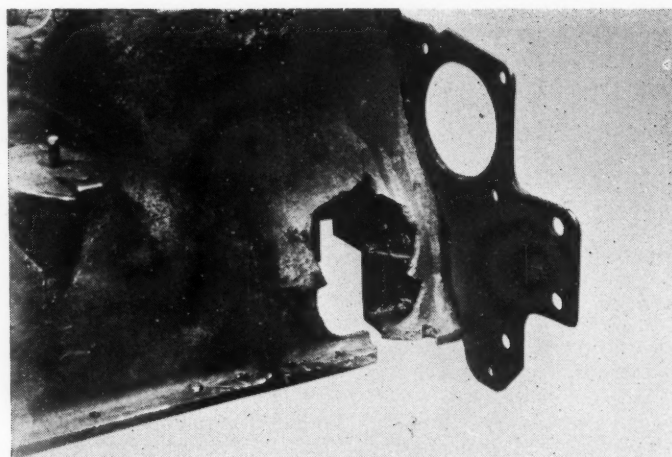
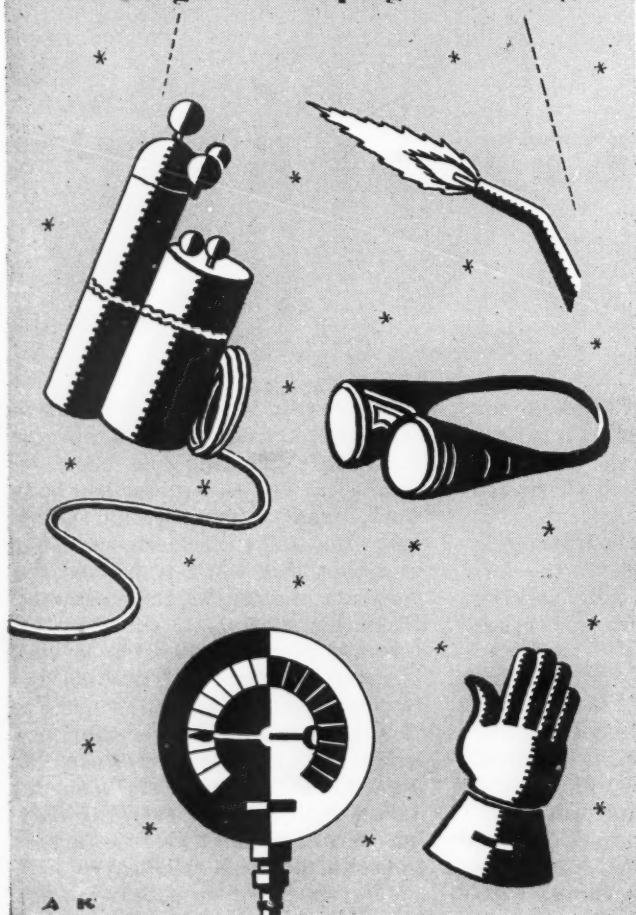
Ultimately, the Fischer shop may equip for all these operations. At present, no space is available for adding equipment or even for keeping cars on the floor the longer time that would be necessary.

(Continued on page 64)



BRONZE WELDING FOR CYLINDER

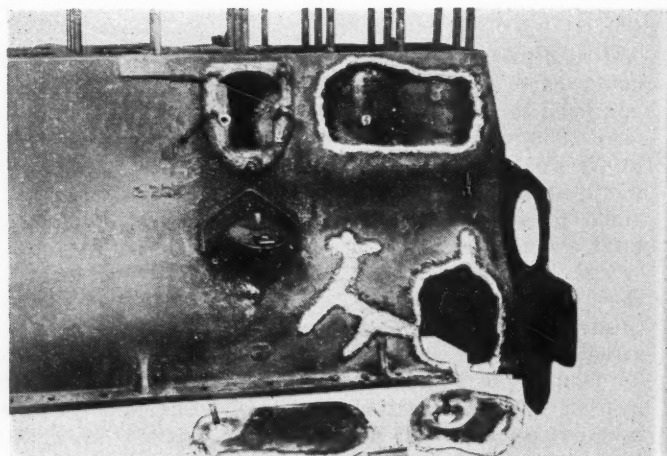
Because little heat is required, this method can be used to make repairs to cast-iron blocks with no danger of warping the casting



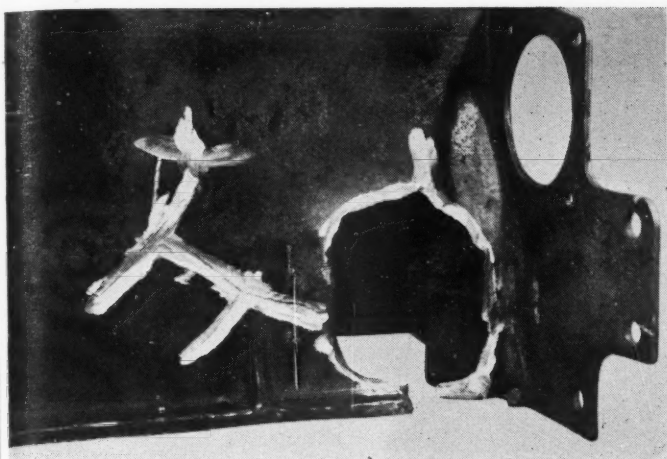
1. This view shows the extent of the open break in the crankcase and bolt flange, and also the radiating cracks. Damage of this nature might have been produced as the result of a connecting rod breaking.

BRONZE welding is particularly adaptable to repairing cylinder blocks and heads that have become cracked or broken because so little heat is required that damage to bearings, valves and other parts through warpage of the head or block is entirely eliminated.

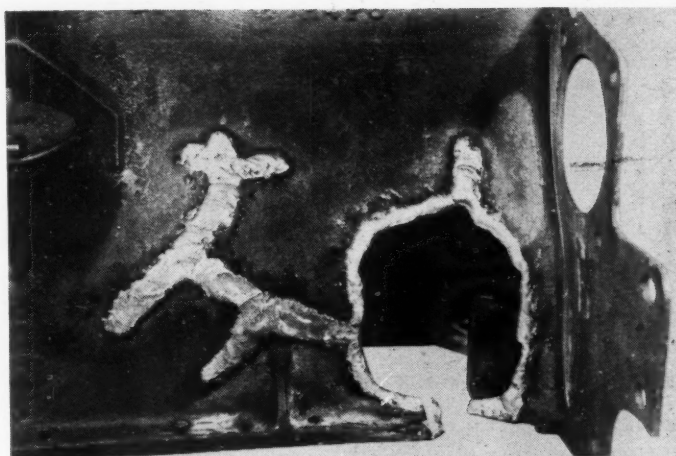
The accompanying pictures illustrate the method of making this type of repair. In this case, it was



5. Patches were cut from 16-gage sheet steel, slightly larger than the openings, and flanged to a dish shape. A "tinning" coat was then applied to their edges. Angle iron was cut to shape to replace the broken bolt flange.



2. The edges of the main break were first ground and beveled, and the cracks discovered and "veed" to sound metal by chipping and grinding. A small hole was drilled beyond the end of each crack to prevent its spreading.

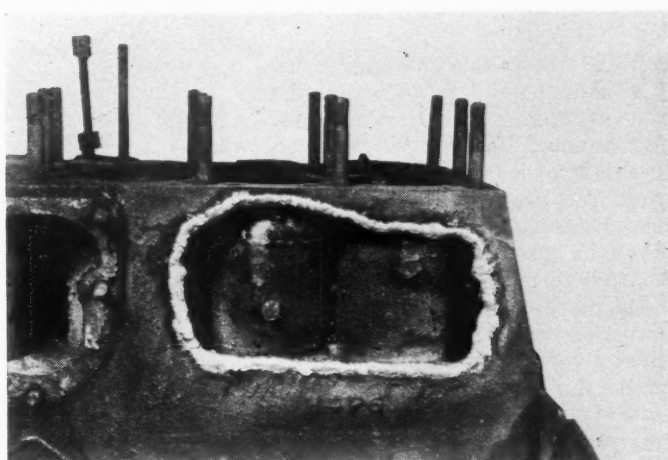


3. No preheat of the casting was necessary. A "tinning" coat of bronze was applied to the edges of the opening, and the cracks were bronze-welded from their extreme ends and progressing toward the main break. Absence of extreme heat prevented misalignment of the casting.

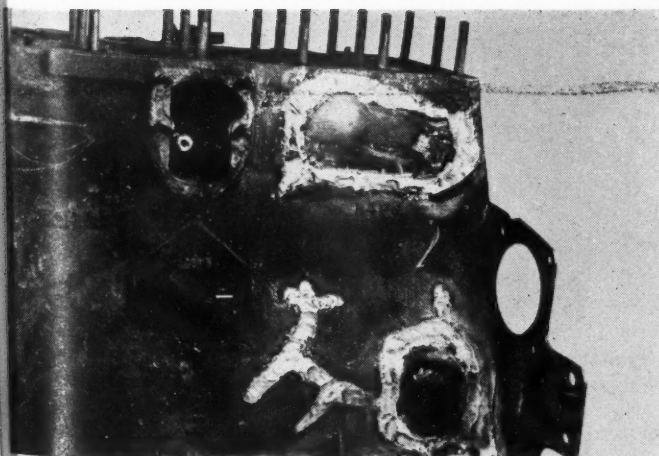
BLOCK REPAIR

Courtesy The Linde Air Products Co.

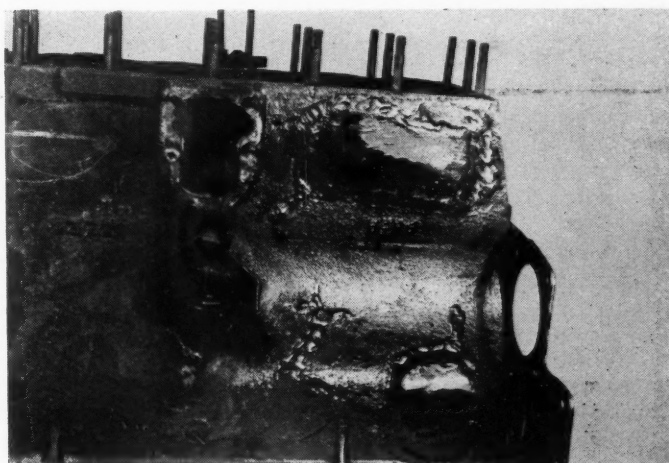
necessary to insert sheet-steel patches to fill the holes. The edges of the patches and the edges of the openings in the block were tinned independently so that in the final bronze-welding operation a good bond was established between these two surfaces. Only enough metal to make a leak-proof joint was used, and the weld metal was applied $\frac{1}{2}$ in. at a time along the joint.



4. A similar procedure of weld preparation was followed in regard to the break in the water jacket. Edges were ground and beveled and a coating of bronze weld metal added, with care taken to apply minimum heat.



5. The patches were bronze-welded in position with edges held flush with the inner surface, and with the dished edges providing a modified vee. The angle iron was welded in place and drilled to receive the bolts.



7. Here is shown the damaged cylinder block completely repaired by bronze-welding. The block has been repainted after sheet-metal patches were applied to the openings, and cracks were closed by bronze-welding.

CAN YOU READ A MIKE?

Here, in one easy lesson, is the way to master the problem of getting the facts with a micrometer

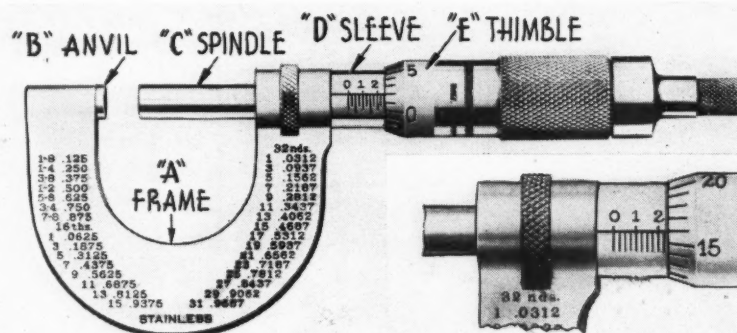
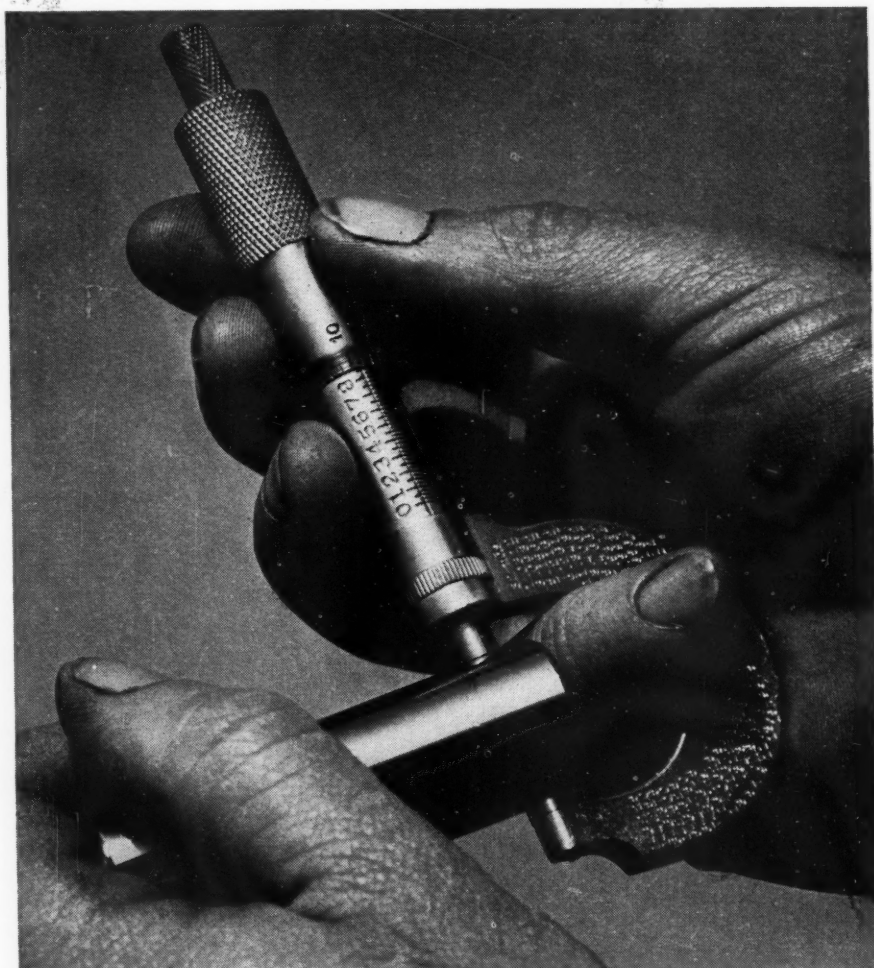
By BOB HANKINSON

EVERY mechanic worthy of the name should be able to read a mike ("mike" being short for micrometer). There is frequent use for this knowledge around the shop, where you are called upon to mike the crankshaft bearing journals, mike the pistons, cylinder walls, etc., to determine the wear that has taken place in order that proper corrections can be made, and as the demand for heavy maintenance increases during the emergency, such knowledge will become increasingly important.

There are two general kinds of micrometers used in the average shop, one commonly known as an "outside" mike, which is used to measure pistons, pins, bearing journals and other parts when it is necessary to know the outside diameter; the other is known as an "inside" mike, used to measure the inside diameter of cylinders, etc. The calibrations on both instruments are the same, so, if you can read one, you can read the other.

As shown in illustration at right, the micrometer consists of "A" the frame, "B" the anvil, "C" the spindle, "D" the sleeve or barrel, and "E" the thimble. The object to be measured is placed between the anvil and the spindle. The spindle is attached to the thimble and screws in and out of the sleeve.

The graduations on beveled end of the thimble "E" each represent .001 in. (or one one-thousandth of

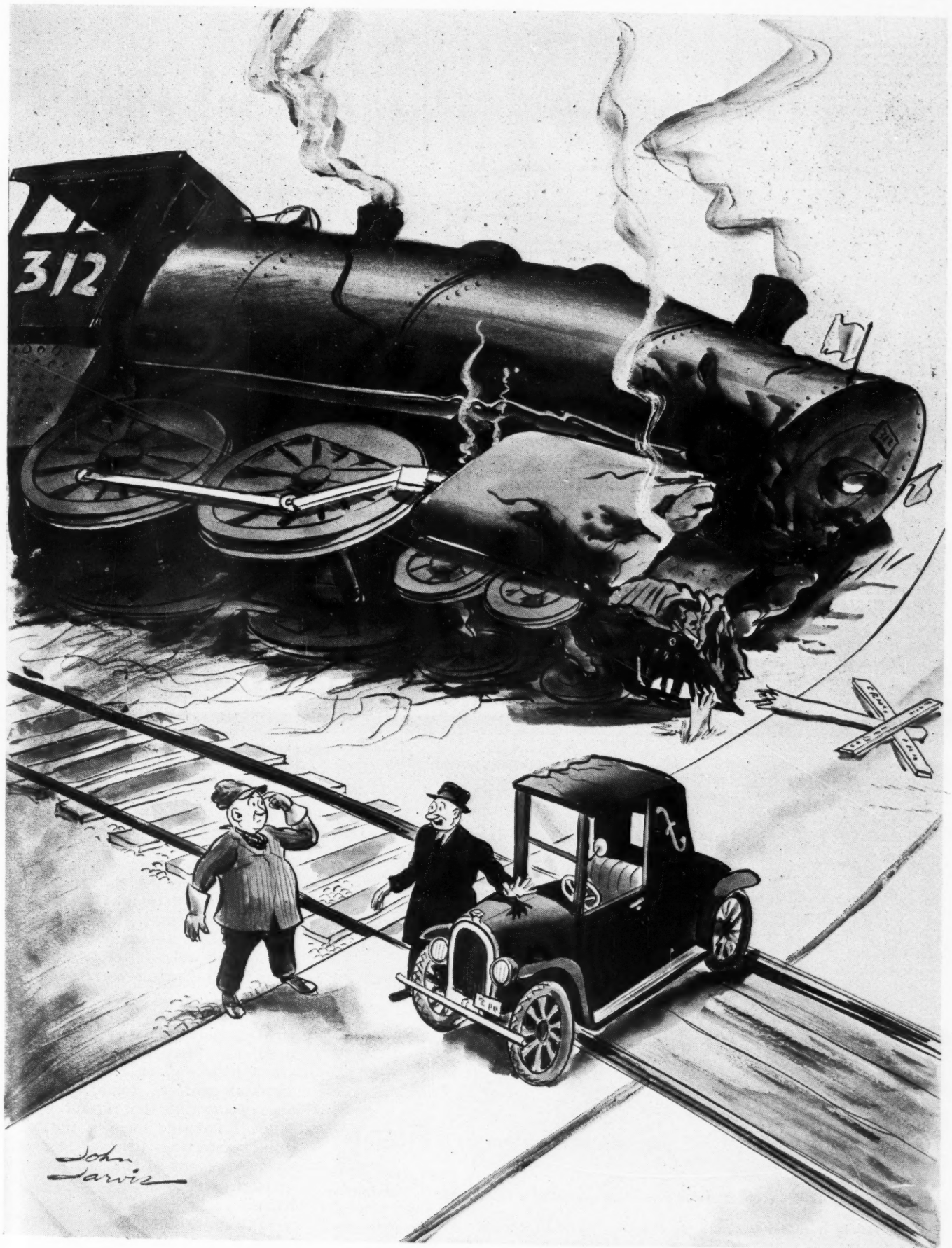


an inch), and they line up with the horizontal line on the sleeve "D." The vertical lines on the sleeve "D" each represent .025 in. (or 25 one-thousandths of an inch). In order to make the edge of the thimble line up with the first vertical line on the sleeve to the right

of the "0" or zero vertical line, one complete revolution of the thimble is necessary.

Start with the "0" mark on the thimble in line with the horizontal mark on the sleeve and with the edge of the thimble at the "0"

(Continued on page 72)



"Sturdy little coupé, isn't it?"

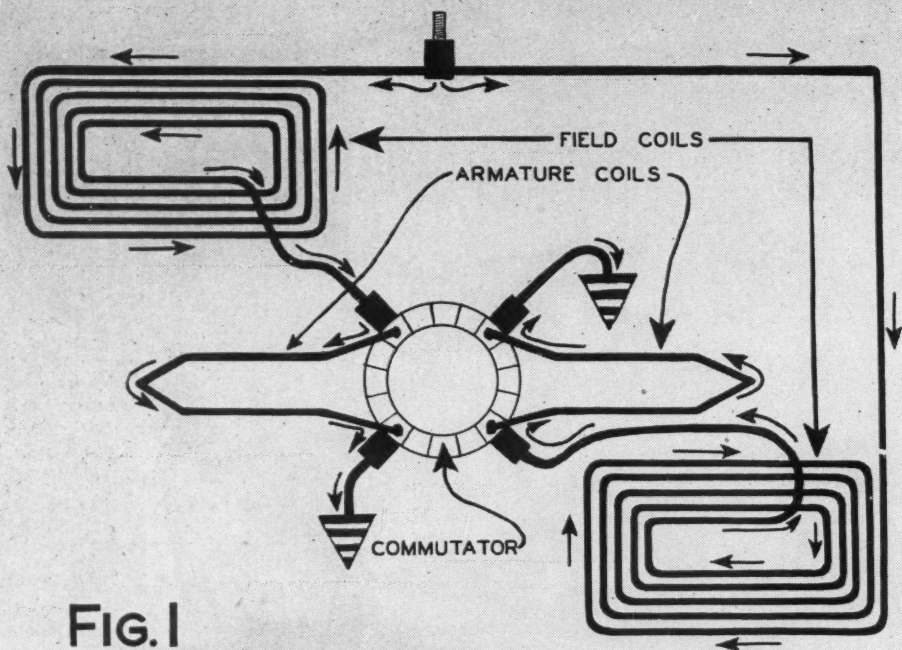


FIG. 1

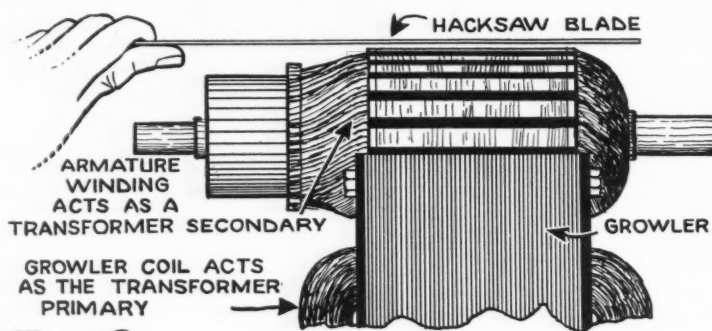


FIG. 2

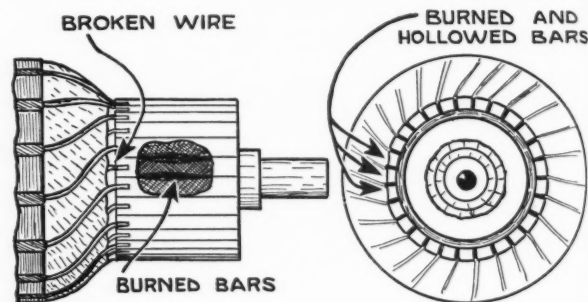


FIG. 3

Fig. 3. Burned bars, caused by open circuits in the armature coil. Burned or hollowed bars often fail to make contact with brushes.

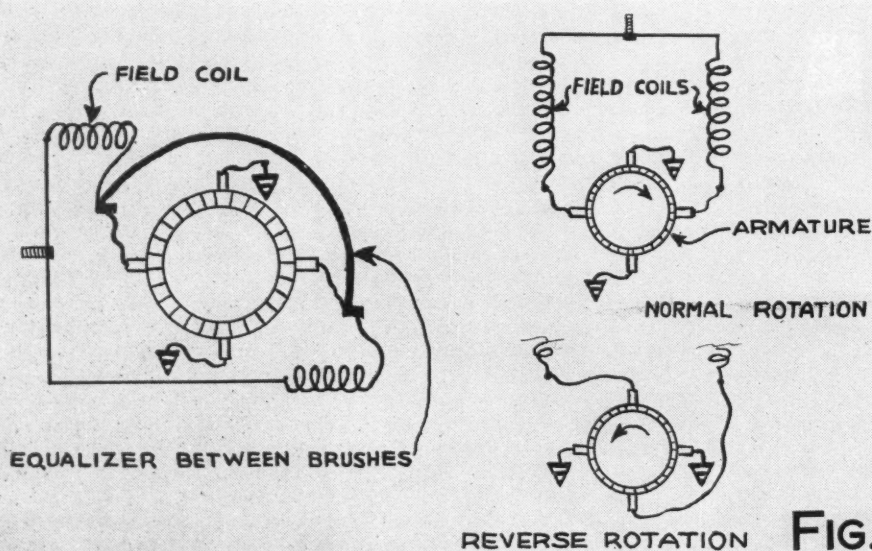


FIG. 6

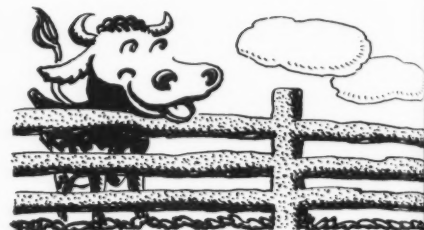
Fig. 1. Here are shown the electrical circuits of a typical starter.

Fig. 2. Testing a starter armature on a growler for short circuits. A heavy-duty type, usually with two coils is needed. One coil is used for generator armature testing. Both coils are used for the more heavily wound starter armatures.

Fig. 6. Excessive burning of commutator bars can often be corrected by balancing the starter field circuits with an equalizer or jumper between the live brushes. Diagrams at right show changes needed to reverse the rotation of a starting motor.

A GOOD

This discussion



“WHAT you going to talk about tonight?” Les Jordan, the assistant shop manager, asked the boss as they left the parking lot and walked over to open the shop for the regular semi-monthly bull session.

“About starters,” Sam Miller replied quickly. “Maybe you’ve noticed, Les, that some of the boys are a little dull or rusty on their cranking motors. Some jobs have been going out that aren’t up to snuff. I imagine some of the boys think starters are too easy to waste much time on, so they slide them through and then there are come-backs.”

“You’re right!” Les agreed. “And besides we have those new men we took on to replace the ones that went in the Army. They can learn a lot more without hurting them.”

By FRED SLOANE

START ON STARTER SERVICE

of basic starter facts will help you make better repairs

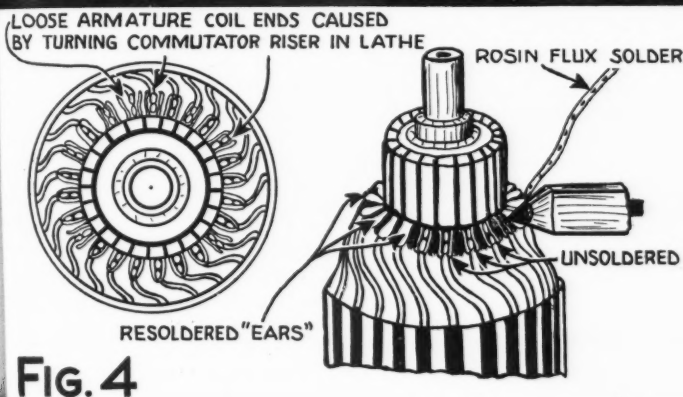


FIG. 4

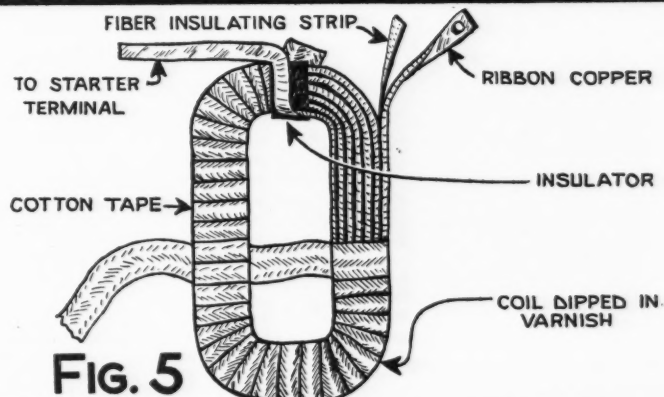


FIG. 5

Fig. 4. Open circuits in a starter armature can be repaired if the break is at the commutator. Clean and resolder the coil ends

to the proper commutator bars. In doing this work, be sure you use a soldering flux that does not contain acid.

Fig. 5. How starter field coils are made. Defects in insulation can be repaired if new coils are not available.

"All of us can," Sam grunted. "What gets me is the way some of them think a starter isn't so important. Hell, don't they stop to reason that, if the starter doesn't start the engine, the whole car isn't of much use? What good is a carburetor overhaul, an ignition tune-up or a valve job if the thing won't start when you want it to?"

Five minutes past 8 o'clock the last of the stragglers were in their chairs in front of the blackboard in a corner of the tune-up department. Sam Miller hung his hat and coat on the back of a chair, stuck his thumbs in the arm holes of his vest and got down to business.

"Back in the days when I started tinkering with cars, there weren't any electric starters, and broken arms were just about as common as dents in fenders," Sam began. "A lot of fool drivers couldn't remem-

ber to retard the spark. When you started out for a little Sunday spin, it was a toss-up whether you'd end up at your Aunt Maude's or in the county hospital. Then, along about 1911 a fellow named Kettering decided to do something for humanity, so he invented the electric starter. Yes, I can remember that far back—and further. If you don't believe me, just look at my bald head.

"Boss Ket knew a motor to start an automobile engine would only have to be used a half minute—or less—at a time, so why not make it small and overload it to beat hell? That's what he did—and it worked, as you know.

"There probably isn't another part of the car that is overloaded as much as the cranking motor," Sam went on. "Crank an engine for three or four minutes straight,

and, if the battery doesn't go dead in the meantime, the starter will burn up the windings or melt all the solder out of the joints. I know that, when you boys once understand what a tremendous job each part of a starter has to do, you'll be more careful in repairing them. Now let's look at the different parts that go to make up the cranking motor.

"First we have the armature. Instead of wire, the starter armature is wound with heavy-gauge strap copper and there is only one turn to a coil. That alone tells you what a heavy current it has to pass. Practically all starter armatures are wave wound; that means the current is always going through one-fourth of the coils that are between one live brush and one ground brush on one side of the armature.

(Continued on page 59)

NEW profit makers

PARTS

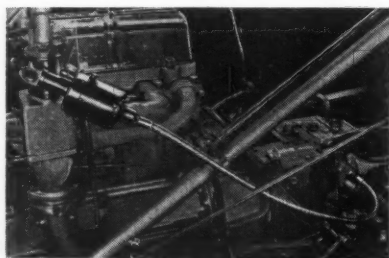
TOOLS

EQUIPMENT

ACCESSORIES

Governor Installation

The completely enclosed, tamper-proof Pierce flyball governor is designed for service on truck, taxi and delivery fleet units. It is generally installed to drive from the transmission to control road speed only, leaving



the engine free when needed for extra power on hills and in traffic spots. It can be applied both as an engine speed governor and a road speed governor. The Pierce Governor Co., 1615 Ohio St., Anderson, Ind.

Clutch Facings

Improved asbestos clutch facings, covering the complete range of industrial as well as automotive service requirements, are announced by the Gatke Corp., 228 N. LaSalle St., Chicago, Ill. Made of different material combinations and various methods of processing to meet operating conditions, these modern clutch facings are furnished in sizes from 14 in. in di-



ameter weighing 1,000 lb. and more, to tiny discs weighing less than an ounce. It is claimed that the use of improved material combinations and special methods of processing result in more dependable performance, as well as greatly extended life.

Glass Cleaner

A new product known as Tat Cleaner has been placed on the market by Soilicide Laboratories, Montclair, N. J. It is a concentrated chemical which, when added to water, makes a glass cleaner for windows and windshields. It is also applicable to cleaning chrome parts. The 10-



cent vial makes one quart of cleaning solution, and the 25-cent vial makes a full gallon. Said to clean without leaving haze, streaks or color reflections. Can also be used for cleaning tile, porcelain, Venetian blinds and showcases.

Drum Rack Part Of Paint Deal

The Sewall Paint & Varnish Co., 1009 West 8th St., Kansas City, Mo., has announced a new drum rack which will be given free with the pur-



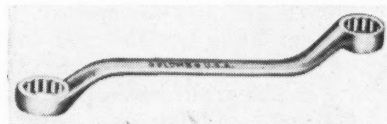
chase of a 5-gallon drum of its products. Also included is a standard size 1½ in. molasses gate faucet. By purchasing supplies in 5-gallon quantities, it is possible to use only a small amount and protect the rest from loss by evaporation or oxidization.

Heavy Duty Piston Ring

Ramsey Accessories Mfg. Corp., 3693 Forest Park Blvd., St. Louis, Mo., has announced a new heavy-duty piston ring to its line of 10-Up oil rings. Designed for truck, bus and tractor use, the new ring incorporates the regular Ramco 10-Up ring features of multiple tension with low wall pressure, maximum oil economy and equal pressure, as it follows extreme cylinder tapers.

Stubby Box Wrench

The Plomb Tool Co., 2209 Santa Fe Ave., Los Angeles, Cal., has introduced a set of four short, 12-point offset box wrenches with an overall



length of 5 to 6½ in. They are designed for work in close places, having an obstruction clearance of 9/16 in. Sold singly or in the set of four, with openings ranging from ⅜ in. to 13/16 in.

Fast Charger



Allen Electric & Equipment Co., 2101 North Pitcher St., Kalamazoo, Mich., has announced a new fast battery charger known as the "Fast 100." There is a 10-position control dial for selecting the charging rate desired, and a 30-min. time clock graduated in one minute steps to control the charge to the desired time limit. There is a built-in tester with "Load" and "Plate Selector" switches to provide proper test for any capacity battery. The unit is mounted on large rubber-tired casters and is finished in red and cream baked enamel. Available in styles for charging 6 and 12 volt batteries, and for operation from 110 or 220 volt, 25, 50 or 60 cycle current.

"V" Horn and Light

The "V For Victory" campaign received a new method of expression with the introduction of a horn which gives three short blasts and one



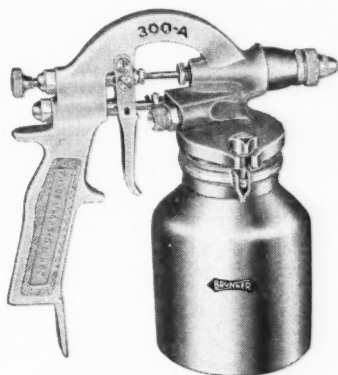
long, and at the same time flashes a blue "V" in the same dot-dot-dot-dash code. This latest innovation is a product of The E. A. Laboratories, Inc., 696 Myrtle Ave., Brooklyn, N. Y.

Brake Service Manual

A new Ferodo Brake Servicing Guide has just been released by Ferodo & Asbestos, Inc., New Brunswick, N. J. This 30-page booklet is written in the mechanic's language and serves as a guide for brake adjusting and servicing operations. It covers all the principal types of brakes, and contains full-page diagrams of the brake shoes. Also contains a complete explanation of the hydraulic brake system. A copy of this manual will be sent upon request.

Spray Gun

One of the newest products to be announced by Brunner Mfg. Co., Utica, N. Y., is their model 300-A paint spray gun. The handle and gun nozzle body are made of cast-aluminum alloy, and the paint container is a one-quart aluminum canister which clamps to the nozzle body.



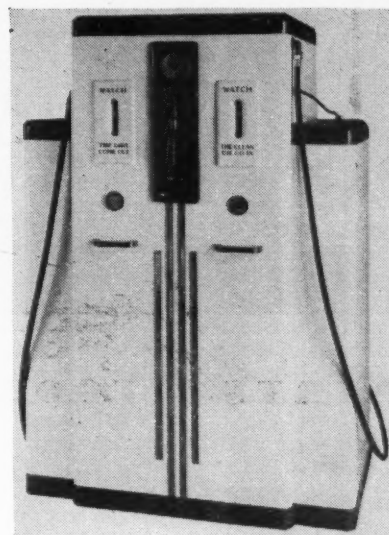
The outfit is supplied complete with two fluid tips, one giving a small round spray and the other a fan spray up to 10 in. in width. Fluid tips and spray caps are of nickel case-hardened steel for long life.

Shimmy Detector

The Bear Mfg. Co., Rock Island, Ill., has developed a machine which it calls the Shimmy Detector. In operation, the car is jacked up so that the front wheels are off the floor but with the weight of the car on the springs. The Shimmy Detector is placed against the tire and the wheel turned up to a car speed of 70 or 80 miles per hour. If there is any out-of-balance condition present it will set up a vibration so noticeable that the owner can see it. Then it is possible to sell him a wheel balancing job.

Engine Cleaner

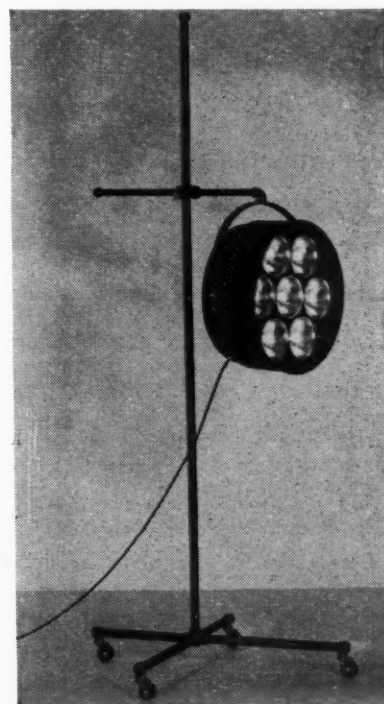
The Internal Motor Cleaner Co., 205 Ross St., Pittsburgh, Pa., has developed an internal engine cleaner which operates by pumping into the crankcase between 35 and 60 quarts



of cleaning oil under pressure so that it strikes the crankcase walls and creates a turbulence which washes sludge and foreign particles from the inside of the engine, and then is drawn out by suction, leaving the inside of the crankcase clean.

Drying Lamp

A new infra-red lamp for quick drying of paint surfacer and finish coat has been introduced by The Trippe Mfg. Co., 564-70 W. Adams St., Chicago, Ill. In addition to using this light for paint drying, it can also be used for thawing out frozen radiators, heat differentials and crankcases and soften grease and oil. The heat units are contained in a black crackle finish housing mounted on a vertical bar for quick adjusting of positions. The entire light is mounted on casters so that it can be moved to any part of the shop.



NEW profit makers

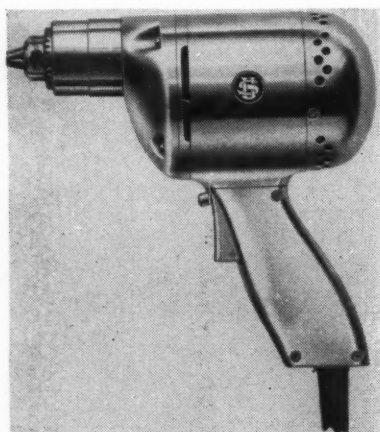
PARTS TOOLS EQUIPMENT ACCESSORIES

Substitute For Aluminum Paint

To compensate for the shortage of aluminum paint, The Lowe Brothers Co., 436 East 3rd St., Dayton, Ohio, has developed ALUMITONE. This new product is formulated of available synthetic resins to produce, as closely as possible, the silvery color and brilliancy which characterizes aluminum paint. Alunitone is intended for use as a finish for trucks and buses.

Aircraft Drill

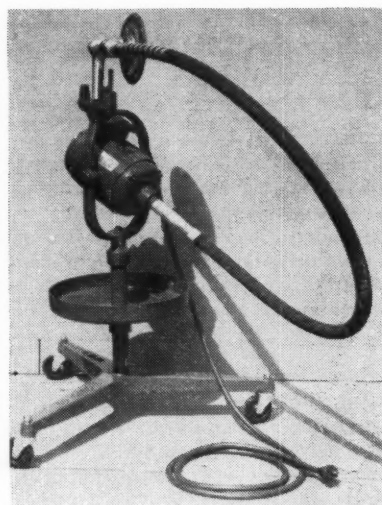
The United States Electrical Tool Co., 2488 West 6th St., Cincinnati, Ohio, has introduced a new ¼-in. electric drill known as Aircraft Model 14 ARD. It is equipped with a uni-



versal motor, and is available in speeds of 700, 1900, 3500 and 5000 r.p.m. Has ¼-in. three-jaw chuck, screwed on spindle, and is furnished with 15-ft. three-wire cable. Trigger switch has locking pin in center of trigger to permit use by either right or left handed operator.

Flexible-Shaft Grinder

Illustrated is the latest model of flexible-shaft grinder announced by Mall Tool Co., 7750 South Chicago Ave., Chicago, Ill. It is powered by a ½-hp. motor, the flexible shaft is 6 ft. long, and various types of grinding



and polishing heads are available. The unit is mounted on an all-steel stand with large casters, to make it easily portable. It can also be used in a stationary, overhead mounting.

Shock Absorber Service

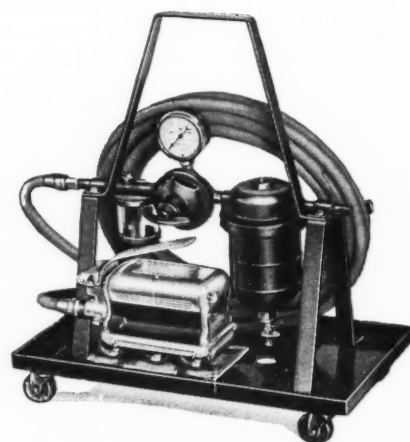
Repair shops engaged in shock-absorber service will be interested in the parts assortment for external service of Delco shock absorbers developed by United Motors Service, and available to dealers and repair shops through authorized United Motors Service branches. The cabinet is sup-



plied free with the parts assortment. A service instruction manual, wall sign and parts catalog is supplied with each cabinet. The kit includes all necessary tools and parts to do complete external shock-absorber service.

Portable Sander

New features have been added to the air-driven Speedbloc sander made by the Sterling Tool Products Co., 368 E. Ohio St., Chicago, Ill. It is now mounted on casters so that the entire unit is portable to the limit of the length of the air hose. There is a handle which serves also as a guard against any injury that might occur



from running or backing an automobile into the outfit. Provision for coiling the hose is another feature. The Sterling Speedbloc sander has a flexible base which enables proper sanding on curved surfaces.

Fluid Level Gage

Of particular interest at this time of the year is the fluid level gage introduced by U-C Level Indicator Sales, 828 North Broadway, Milwaukee, Wis. Designed to fit all standard 55-gallon steel drums, it shows at a glance the level of the fluid within. Another feature of the gage is that it fits into the drum and has a place for the regular faucet to fit into the gage, so no special faucet is necessary.

Baldor Has New Battery Charger

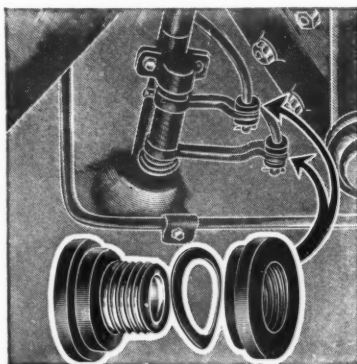
The Baldor Electric Co., 4351 Duncan Ave., St. Louis, Mo., has a new fast battery charger, known as the Rect-O-Lyzer, for charging or testing batteries in the car. It tests each cell separately by a discharge test, charges at automatically tapered



rates beginning at 80 amperes and ending with a soaking rate of 15 amperes, and has no moving parts to get out of order. Complete details will be found in Bulletin No. 302 which will be sent upon request.

Gearshift Bushings

Champ Items, Inc., 6191 Maple Ave., St. Louis, Mo., has developed fiber insulated bushings to replace the standard rubber bushings in the gearshift lever for Ford and Mercury cars. It is claimed that these bushings can be installed without removing the gearshift lever arm, and that they are not affected by oil or heat, and keep positive adjustment at all times. List at 30 cents each.



Truck Battery

National Battery Co., St. Paul, Minn., has announced a new truck battery. It is being manufactured under Kathanode Corp. patents, using



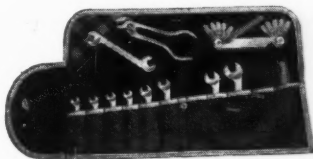
the Kathanode construction with spun-glass mats, and is available in all sizes for light trucks, tractors and delivery cars. It can also be used for extra-heavy-duty passenger car service.

Low-Cost Welding Outfit

A new low-cost welder, known as the Magic Electro Welder, has been announced by Magic Electro Welder Mfg. Co., 239-241 Canal St., New York City. This new outfit is designed for work on aluminum, brass, copper, iron, steel and other metals and operates from AC or DC 110-volt current. The complete outfit includes welding and braking rods and fluxes, goggles, etc., and a metal carrying case. Total price is \$19.95.

Electrical Tool Set

The Bonney Forge & Tool Works, Allentown, Pa., has developed a set of tools designed especially for the automotive electrical and ignition mechanic. Known as Set. No. 15, it contains nine open-end wrenches with



openings from 13/64 in. to 1/2 in., with thin, paneled handles. Each wrench has a different size opening in each end, one being at a 15-deg. angle and the other at 60 deg. Heads are thin and narrow. Also included is a 4-in. screw driver with a 2-in. blade and 1/8-in. tip, a 4 1/2-in. adjustable ignition plier, ignition feeler gages and a point file.

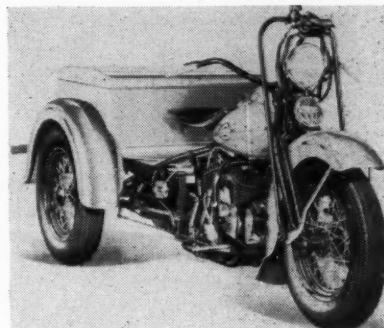
Paint for Touch-Up

Jobbers of Pittsburgh automotive finishes made by the Paint Division of Pittsburgh Plate Glass Co., 235 E. Pittsburgh Ave., Milwaukee, Wis., are offering a new paint package, the Mimax Serviscan. It is a half-pint can of paint containing one of the 1940 or 1941 automobile colors; the complete line is available covering all

of the colors used. This provides a convenient means of carrying a complete stock of paint for touch-up, with a small investment, and eliminates the necessity for mixing paints to match colors. List price of a Mimax Serviscan is 50 cents, with reds and maroons listing at 55 cents per can.

Pick-Up Service

The 1942 models of the Harley-Davidson Servi-Car provide a larger capacity in the service compartment, the body extending farther to the rear. In addition, two plunger-type shock absorbers have been incorpo-



rated in the rear suspension to stabilize the body. The new models employ the large sub-frame formerly used on the GD model. A new saddle of thick whipped latex, a new horn, and additional protection for the tail light are other features. Illustration is of the Model "G," equipped with a tow-bar. Made by Harley-Davidson Motor Co., Milwaukee, Wis.

Display Stand

The Emerol Mfg. Co., Inc., 242 West 69th St., New York City, is offering an attractive, sales-boosting display stand free with an assortment of Marvel Mystery Oil. The sign on the stand is finished in red, black, white and yellow, and the stand holds a complete assortment of the smaller sizes of Marvel Mystery Oil, and four pint cans of Marvel Hi-Rev. It is constructed of heavy black-enameled wire.

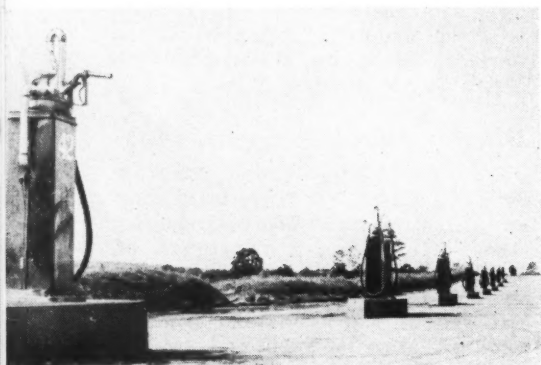


NEWS



JANE LAW. It isn't nice anywhere to call a traffic cop John Law, and in Sacramento, Cal., it isn't even accurate. Here's one of the city's lady cops handing out a ticket.

DIVISION PUMPS. This line of pumps has the job of fueling the 3100 vehicles of the 2d Armored Division at Fort Benning, Ga.



BLITZ VEHICLES. This part of the First Army shows a wide variety of motorized vehicles as it begin maneuvers in the South.



UNFIT FOR DUTY

THERE is every indication that the business of retreading and recapping tires is about to enjoy a good-sized boom. Full effect of the curtailment of new tires has not yet been felt, except for scarcity in some areas of the popular sizes. When the scarcity becomes sharper, many owners that have never bought anything but new tires will turn of necessity to retreading or recapping.

Many such owners will assume that any tire with a worn tread can be retreaded or recapped. With work of this kind so plentiful, some tire men may be tempted to do as the customer wishes. It might be well, before yielding to the temptation, to reflect on some data recently revealed in New York.

A tire dealer in that city examined 2796 tires in a four-month period. All were the popular 6.00 by 16 size.

Of the number examined, 1393 were found to be wholly unfit for treading or recapping. Only 849 were found to be in perfect shape for remaking.

Retreading or recapping a defective tire can have only unfortunate re-

sults. The tire will inevitably fail in service and the whole retreading business will have to answer an undeserved charge of careless work.

PARADOX

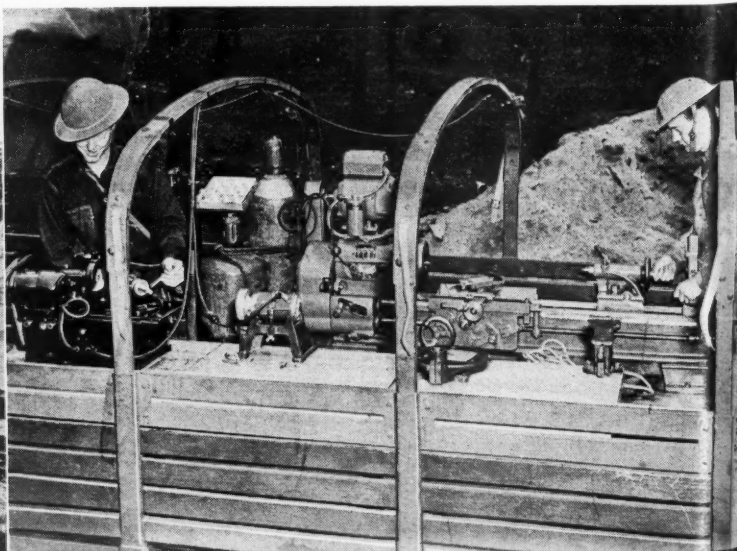
MOST automobile men keep an eye cocked at the used-car market for hints as to future trends. Lately they've seen some unusual things, even if they have not been enlightening.

It was expected that the curtailment of new-car production would immediately be reflected in the demand for used cars, and that prices of used cars would increase. Experience in many sections has failed to bear out these expectations.

In Chicago, for example, used-car sales in October increased only 1 per cent over the same month last year. During the same time, however, the cars on hand dropped 11 per cent. On Oct. 1, dealers in Chicago had 38.5 days' supply of used cars on hand; a month later they had only 35.5 days'.

The paradox is explained by the decline in demand for new cars. Deal-

ROVING SHOP. One of the latest supplied the Army, this mobile machine shop is equipped with lathes, punches, drills, and welding machines, enabling it to perform almost any job for motorized units in the field. The shop on wheels is manned by expert machinists.



DETROIT LETTER

By ED WARNER

ers in most sections are finding the demand slow, and many of them are not pushing sales too hard, preferring to let the demand build up for the new year when curtailment will be more severe than it is now.

PRODUCTION CUTS

AFTER setting a production limit on light trucks at a figure 39.5 per cent less than the January, 1940, figure, the OPM ordered a cut of 43.9 per cent in the February production of passenger cars.

So far, the full import of these cuts has not been felt, particularly by passenger-car buyers. It is generally agreed that the 1941 market was overbought and that the present lull in new-car sales is due largely to that fact. As the new year dawns, dealers are going to realize that virtual halving of their new-car volume is a loss they can survive only if they can fall back on service business.

In delaying the deadline for bright work on new cars until Jan. 1, the OPM gives manufacturers with a stock of such critical materials as copper, nickel, chrome, and aluminum

INCREASING popularity of automatic and semi-automatic transmissions is evident from the sales reports of companies offering these driving facilities as optional equipment. Oldsmobile, whose Hydra-Matic Drive was the first fully automatic transmission in a production motor car, currently is selling 72 per cent of its 1942 models with this feature, compared with only 45 per cent on the 1941 model run. Cadillac, which introduced the Hydra-Matic Drive part way through the '41 model season, finds 50 per cent of its customers demanding this transmission in comparison with 20 per cent for the 1941 model sales.

Chrysler, which pioneered the

Fluid Drive, a semi-automatic transmission, continues to sell 99 per cent of its automobiles with this feature just as it did last season. Ninety-three per cent of Dodge passenger car sales also carry the fluid flywheel, as compared with 77 per cent for the '41 model year. DeSoto Fluid Drive sales are 90 per cent, compared with 80 per cent on the 1941 models. Hudson has introduced a semi-automatic transmission, the Drive-Master, which is installed on 23 per cent of the 1942 model deliveries. Last year Hudson had a vacuum-operated cylinder control clutch which accounted for 4½ per cent of sales. Packard's semi-automatic transmis-

(Continued on page 70)

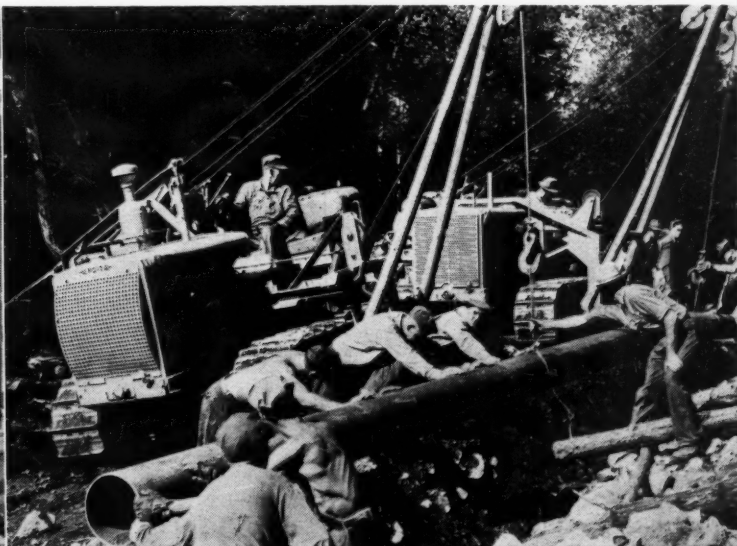
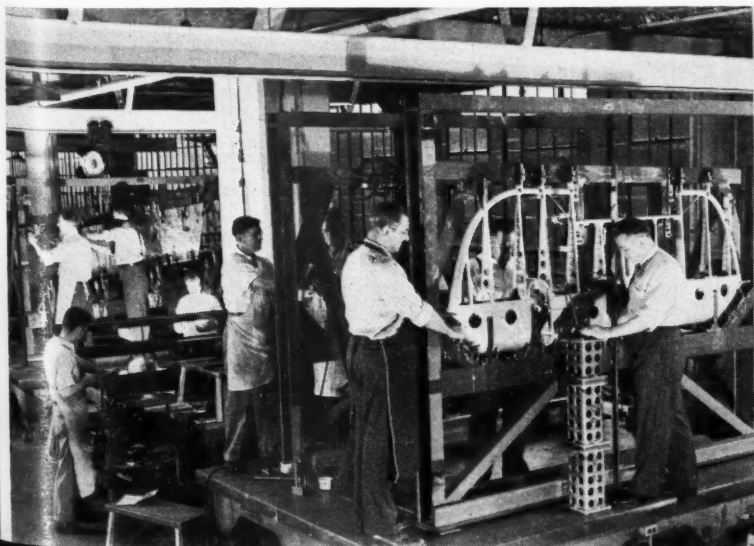
an opportunity to use them. Those that have large quantities on hand are to be permitted to use them after Jan. 1, provided the bright trim is disguised. This unquestionably is a very smart idea, but it is not explained how it can save critical materials.

PROOF

FOR some time, it has been evident that the service business was going to enjoy a marked upswing. MOTOR AGE has been emphasizing this point at every opportunity. From personal

BOMBER BY FISHER. It is a temptation to alter the slogan of the famous body plant now that it is producing parts for the Army's B25-D medium-range bombers. Here workmen are completing a jig for the ship's double rudders.

SHIP SAVER. Laying a section of the Portland-Montreal pipe line to carry crude oil from the sea to Canada and thus replace tankers needed for transatlantic and other service.





visits to service shops and reports drifting in from here and there, confirmation of this view has not been lacking, yet it is gratifying to have the same fact established by the survey made by the De Soto Division of the Chrysler Corp.

L. G. Peed, vice-president of the division, reports that during the six months ended Oct. 1, service volume of De Soto dealers increased 20 per cent over the corresponding period last year.

A further interesting fact is brought out by the survey. The dealers increased their service facilities by 30 per cent. They realized, as all shops will eventually, that getting service business during the emergency is going to be competitive.

YANK HELPS RAF. George Broderson, of New York, working on an RAF car in London. He belongs to the Civilian Technical Corps.

ECONOMY TEST. New York WPA workers test a car to determine whether it operates economically. The tests were made free.

IN ARMY NOW. Ed Benson, of Tangipahoa Parish in Louisiana, tells customers why he is no longer operating his filling station.

There will be plenty of business, but the bulk of it is going to shops that make the greatest effort to obtain it.

BEARING DOWN

INTENSIFICATION of National Automobile Dealers Association efforts to protect the interests of its members during the defense emergency may be expected with the removal of association headquarters from Detroit to Washington. L. Clare Cargile, the president, had already established his office in the capital, and the Labert St. Clair organization, handling association public relations, is located there.

In times such as these, there are things no organization can do. Individual aims and efforts must take second place when the national safety is threatened. Still there is the opportunity to see that sacrifices are distributed fairly and justly. In making the most of such opportunity, an association can be of great benefit.

Independent repairmen are still without an accredited spokesman.

TIRE PRICES

THE Office of Price Administration reports that, up to late October, tire retailers were selling tires out of stock at prices based on actual cost. This indicates a commendable desire

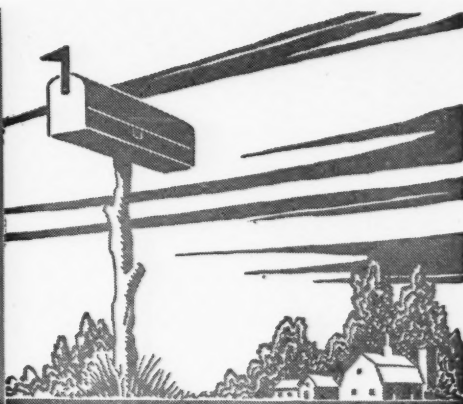
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September New Passenger Car Registrations

	SEPT. 1941	AUGUST 1941	SEPT. 1940	NINE MONTHS		Per Cent Change, 9 Months, 1941 over 1940	Per Cent of Total Nine Months		TWELVE MONTHS MODEL YEAR		
				1941	1940		1941	1940	1941	1940	Per Cent Change
Chevrolet.....	20,236	57,326	30,805	769,149	620,833	+ 23.9	23.84	24.94	1,001,450	830,399	+ 20.6
Ford.....	22,708	52,895	13,771	523,630	399,762	+ 30.9	16.23	16.06	668,415	544,133	+ 22.8
Plymouth.....	20,526	23,018	19,442	394,073	323,503	+ 21.8	12.21	12.99	510,687	398,078	+ 28.3
Buick.....	5,927	17,137	20,186	266,362	206,521	+ 28.9	8.25	8.30	355,375	284,635	+ 24.8
Pontiac.....	4,129	15,710	11,805	246,070	164,279	+ 49.8	7.63	6.60	317,645	223,295	+ 42.2
Oldsmobile.....	6,521	11,854	9,083	200,095	141,002	+ 41.9	6.20	5.66	260,352	194,524	+ 33.8
Dodge.....	10,806	15,968	7,144	184,871	153,610	+ 20.4	5.73	6.17	228,529	187,749	+ 21.7
Chrysler.....	5,770	10,349	3,069	126,096	72,508	+ 73.9	3.91	2.91	153,698	88,577	+ 73.5
Studebaker.....	4,297	7,565	6,840	95,374	75,364	+ 26.5	2.96	3.03	122,292	102,538	+ 19.3
De Soto.....	5,695	9,623	3,392	78,792	54,024	+ 45.8	2.44	2.17	96,711	65,892	+ 46.8
Mercury.....	2,498	5,736	2,821	69,656	60,818	+ 14.5	2.16	2.44	89,252	82,836	+ 7.7
Nash.....	2,319	3,677	2,182	67,592	39,728	+ 70.1	2.09	1.60	80,717	54,398	+ 48.4
Hudson.....	5,238	4,677	7,156	62,065	59,650	+ 4.0	1.92	2.40	82,459	83,820	- 1.6
Packard.....	4,860	4,202	5,342	54,174	55,257	- 2.0	1.68	2.22	72,718	76,971	- 5.5
Cadillac.....	1,210	3,277	1,755	50,683	24,685	+105.3	1.57	.99	64,562	35,951	+ 79.6
Willis-American.....	1,395	2,211	1,386	19,272	16,572	+ 16.3	.59	.67	24,117	22,480	+ 7.3
Lincoln.....	604	1,099	1,040	15,448	15,541	- .6	.48	.62	20,911	21,393	- 2.3
Crosley.....	177	198	30	822	321	+156.1	.03	.02	933	456	+104.6
Graham.....	13	14	206	519	1,325	-308.3	.02	.05	1,050	1,638	- 35.9
Bantam.....	16	14	55	120	701	- 82.9	.04	.04	319	933	-265.3
Miscellaneous.....	348	45	490	1,883	3,087	- 39.0	.06	.12	3,029	3,694	- 1.8
Total.....	125,293	246,595	148,000	3,226,746	2,489,091	+ 29.6	100.00	100.00	4,155,121	3,304,390	+ 25.7
Chrysler Corp.....	41,399	56,900	33,047	783,832	603,645	+ 29.8	24.29	24.25	989,625	740,296	+ 33.7
Ford Motors.....	25,810	59,730	17,632	608,734	476,121	+ 27.8	18.87	19.13	778,578	648,362	+ 20.1
General Motors Corp.....	38,023	105,304	73,634	1,532,359	1,157,320	+ 32.4	47.49	46.50	1,999,384	1,568,804	+ 27.4
All Others.....	20,061	24,661	23,687	301,821	252,005	+ 19.8	9.35	10.12	387,534	346,928	+ 11.7



Bill Toboldt, Editor, Motor Age



THE READERS'

CLEARING HOUSE

of Servicemen's Queries

BRAKE ADJUSTMENT

We have a DeSoto 1938 Model S-5 which has not had a firm brake pedal since it was purchased. Last week the pedal went spongy.

We overhauled the master and wheel cylinders, and fitted new washers all around, examined hoses to each wheel, and pumped fresh fluid through the system.

The brake lining is worn about 30 per cent. We adjusted the anchor to .005 in., and the toe to .010 in., but best results were obtained with anchor .012 in., and the toe adjusted until tight, and then backed off. This pedal will not pump up like others we have. The Farmers Co-Operative Auctioneering Co., Ltd., Hamilton, New Zealand.

THERE are several conditions that might contribute to this trouble and the fact that you have to set the anchor at .012 in. clearance instead of .005 in. leads me to believe that there is something wrong with the brake itself. This might be due to the fact that the shoes have been sprung by an unusually severe brake application, or that they have been relined with the wrong thickness lining. I think it would be well to remove the shoes and

place them against the inside of the drum and check the contour to be sure the entire surface of the brake lining is contacting the drum. This will show whether the brake shoe has been sprung. If it has, the shoe should be replaced.

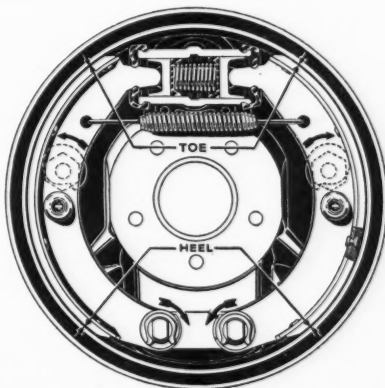
The brake lining thickness which should be used on this job is 13/64 in. If a different thickness lining has been used, it naturally will affect the brake shoe adjustment.

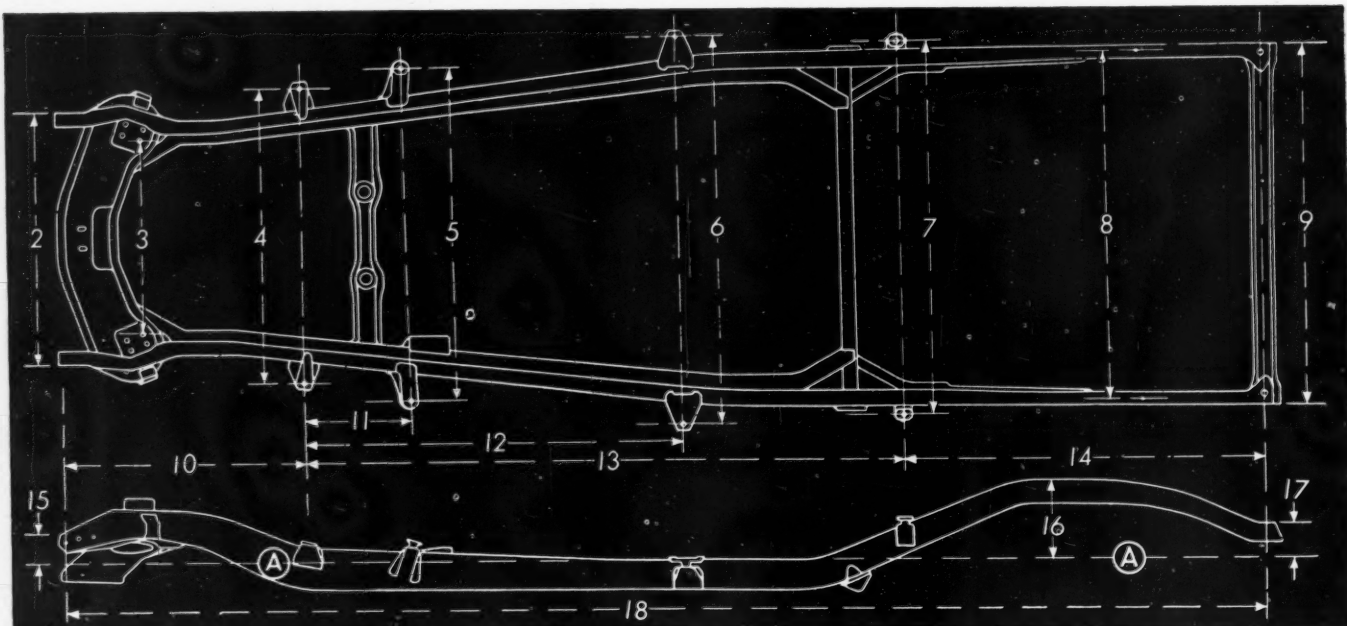
Another condition which may contribute to this trouble is a poor or weak piston cup in the master cylinder. Occasionally, it happens that the

piston cup is not able to stand the pressure of the normal brake application when it is held on, and the cup will permit a leakage of fluid back into the master cylinder. You mention that you have installed new washers in the master and wheel cylinders, and I assume that you mean new rubber cups. This, of course, should take care of any difficulty such as mentioned above but, in the event you did not replace the piston cup in the master cylinder, I suggest you do so.

If you find the shoes to be in good condition and to be lined with the proper lining, I suggest you try adjusting the shoes as follows:

Turn the anchor pin down until the brake shoe drags on the drum. Then back it off until the drum is just free of drag. Then adjust the eccentric adjuster to bring the upper end of the shoe out until it drags on the drum and then back it off until the drum is just free of drag. Repeat this adjustment at each shoe on each wheel. This will give a pretty close setting of the shoe in relation to the drum and will help to show up any out-of-round condition which may be present. If the drum appears to be in good condition, this adjustment being close, should give a quick acting brake with a minimum of pedal travel.





Frame Diagram — 1942 Chrysler

Dimensions in Inches		
C-28	C-30	C-33
A—Top line of frame		
2—35 (35 ³ / ₃₂ on 7 Pass.)	35 ¹ / ₁₆	35 ¹ / ₈
3—26 ²⁵ / ₃₂	26 ²⁵ / ₃₂	26 ²⁵ / ₃₂
4—40 ¹⁷ / ₃₂ (40 ⁵ / ₈ , 7 Pass.)	40 ¹⁹ / ₃₂	40 ²¹ / ₃₂
5—45 ⁵ / ₈ (45 ²³ / ₃₂ , 7 Pass.)	45 ¹¹ / ₁₆	45 ³ / ₄
6—53 (53 ⁵ / ₈ , 7 Pass., 53 ¹⁷ / ₃₂ , 2 Dr. Sed.)	53 ¹ / ₁₆ (53 ¹⁹ / ₃₂ , 2 Dr. Sed.)	53 ²¹ / ₃₂

Dimensions in Inches		
C-28	C-30	C-33
7—50 ¹ / ₂ (50 ¹⁹ / ₃₂ , 7 Pass.)	50 ⁹ / ₁₆	50 ⁵ / ₈
8—46 ³ / ₄	46 ³ / ₄	46 ³ / ₄
9—48 ¹ / ₄ (48 ¹¹ / ₃₂ , 7 Pass.)	48 ⁵ / ₁₆	48 ³ / ₈
10—35 ⁴⁵ / ₆₄	41 ⁴⁵ / ₆₄	41 ⁴⁵ / ₆₄
11—14 ⁴³ / ₆₄	14 ⁴³ / ₆₄	14 ⁴³ / ₆₄
12—51 ⁵⁹ / ₆₄ (60 ³¹ / ₃₂ , 7 Pass. and 2 Dr. Sed.)	51 ⁵⁹ / ₆₄ (60 ³¹ / ₃₂ , 2 Dr. Sed.)	60 ³¹ / ₃₂

Dimensions in Inches		
C-28	C-30	C-33
13—81 ²⁹ / ₃₂ (99 ²⁹ / ₃₂ , 7 Pass.)	81 ²⁹ / ₃₂	99 ²⁹ / ₃₂
14—48 ⁷ / ₈	54 ⁷ / ₈	48 ⁷ / ₈
15—4 ¹ / ₃₂	4 ¹ / ₃₂	4 ¹ / ₃₂
16—10 ¹³ / ₁₆	10 ¹³ / ₁₆	10 ¹³ / ₁₆
17—4 ⁷ / ₈	4 ⁷ / ₈	4 ⁷ / ₈
18—166 ³¹ / ₆₄ (184 ³¹ / ₆₄ , 7 Pass.)	172 ³¹ / ₆₄	190 ³¹ / ₆₄

If these checks fail to show up any out-of-line condition, then I suggest you replace the check valve in the end of the master cylinder. Occasionally this check valve leaks and will allow air to get in to the lines, particularly when the car stands over night. Under those conditions, the brake pedal would be constantly spongy but with no other evidence of trouble in the braking system.

PERIODIC VIBRATION

This refers to a 1940 LaSalle. When riding at 45 to 50 miles per hour, there is so much vibration you would think the car was falling apart. This condition occurs only at this speed.

I have checked the drive shaft and found everything O.K. Have changed the tires by changing front to rear, right to left, but this did not help. Also changed one front wheel bearing which was bad. I notice, when driving this car at a slow rate of speed, it seems to have a bumping noise as if the tire had a blow-out patch in it. I checked the tires and found there were no flat spots and no patches in them. Philip Orlando, 464 Woodcliff Ave., Hudson Heights, N. J.

THE first thing you should do with that 1940 LaSalle is to try to isolate the noise so that you can confine it either to the engine or to the running gear. By that, I mean you should speed up the engine to the vibration

range with the car standing still to decide whether the vibration is in the engine.

If you can bring in the vibration with the car standing still, then get in the car and depress the clutch pedal to see whether that makes any difference. If it clears up the condition, then you will know that the vibration was caused either by a clutch that is out of balance or a loose flywheel. If operating the clutch does not make a difference in the vibration, then I believe you should look at the vibration damper on the front of the crankshaft.

If the vibration does not appear with the car standing still, then you should check front wheel bearings and also rear wheel bearings which may be rough or broken. Also check the operation of the front shock absorbers and check the front wheels for being out of balance.

I believe that by making tests as outlined above, you will be able to isolate this noise and, when you have done that, it is simply a matter of bringing it down to one condition which should not be difficult.

WHO KNOWS?

I am seeking information about the use of waste oil as fuel for the large "pot-bellied" type stove in our garage; or if it is necessary to make any other kind of heating apparatus we can do that. Our heater is about 4½ ft. high

and about 2 ft. in diameter in the center.

Our experiments haven't been any too successful, but I am sure there must be a good method. F. Arthur Hill, 62 Gill Place, Buffalo, N. Y.

I AM sorry that I don't know how to make a burner utilizing crankcase oil. So will some reader please help the cause by sending in the details?

OLD MODEL SPEEDOMETER

A friend of mine says that he recently saw a car of very old vintage, perhaps 20 to 25 years old, which had a speedometer reading well over 500,000 miles.

Knowing that cars of today have speedometers which show readings only up to 99,999 miles, I am inclined to doubt this story about the speedometer on the old car.

I will appreciate any information you can give me on this subject, and, if the old cars did have this type of speedometer, can you give me the names and the year models? Adam D. Diemicke, Wantagh, L. I., N. Y.

YOUR friend is right in that he claims to have seen this high-reading speedometer on the old car.

Speedometers having this registry were made by several speedometer manufacturers during the days when the speedometer was not standard

equipment on each car or truck. These speedometers were purchased by the individual owners and installed on their cars, and date back to a period around 1910 and 1912.

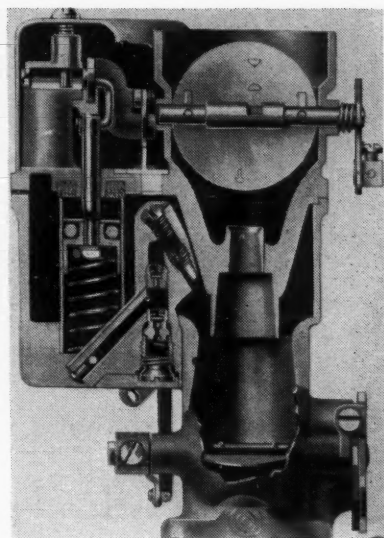
It would be impossible to give the makes of cars on which these speedometers were installed because, as mentioned above, they were not standard equipment.

DOUBLE TROUBLE

I have been a reader of MOTOR AGE for some time, and it is one of the best magazines of its type published. I always enjoy reading about other people's troubles, but I never thought I would have anything serious with my own cars.

The first thing is some trouble with a 1941 Chevrolet. At speeds between 35 and 40 on a slight grade, it will miss quite noticeably. In high gear, at about 60, it will cut out the same way, although, if you baby it a little past this speed, it will run perfectly. The car has run this way since it was new, and it now has about 7000 miles on it. It gets good gas and oil mileage, and otherwise runs perfectly. I have checked carburetor and ignition and both seem all right. Valves are O.K. and compression is good. I have been wondering if it would do any good to put the larger size spark plugs in. What do you think the trouble could be?

I also have a 1936 Chevrolet that pops back through the carburetor



when starting, and sometimes at a fairly high speed, say around 50. It just pops once or twice, and then runs all right. This car has gone about 40,000 miles, and has had no major repairs. Carburetor seems O.K.; new fuel pump, coil, condenser and spark plugs have been installed. Do you think it could be the washer on the carburetor metering rod? Charles Allwander, 615 N. E. 87 Ave., Portland, Ore.

THE first complaint is a perfect indication of trouble in the radio suppressor, which is usually connected to the high-tension wire where it enters the distributor cap. If this car is

equipped with a radio and suppressor on this wire, I would suggest that you remove the suppressor and try running the car without it. If the car runs satisfactorily, then it is an indication that you need a new suppressor.

If the car does not have a radio, then I suggest that you install a richer carburetor metering rod in this carburetor.

The difficulty with that 1936 Chevrolet might be traced to a worn accelerating pump operating arm. When this arm becomes worn, it loses some of the effective stroke of the pump, and will cause this condition.

FRONT BRAKES GROAN

I am having trouble with a 1936 Ford V-8. The front brakes groan when applied at any speed. I have relined the brakes with different types of lining and reset all brake rods, but this does not correct the trouble.

I have turned the drums, using the correct shim between the lining and the shoe, rebushed the front end, alined front wheels, installed front brake wedge washers, checked front springs, tightened all motor supports, checked front cross member for loose rivets and renewed the shock absorber links. Ramsey's Garage, Vicksburg, Miss.

THERE is one important point you did not mention in your letter, and that is the brake backing plate. One

BATTERY LOCATION CHART FOR 1942 CARS

RIGHT SIDE

LEFT SIDE

Under Hood

Buick
Cadillac
Chevrolet
Ford V8
Lincoln Zephyr,
Continental
and Custom
Mercury
Willys

Under Hood

Chrysler
DeSoto
Dodge
Ford 6
Hudson
Oldsmobile
Packard Clipper
Plymouth
Pontiac
Studebaker

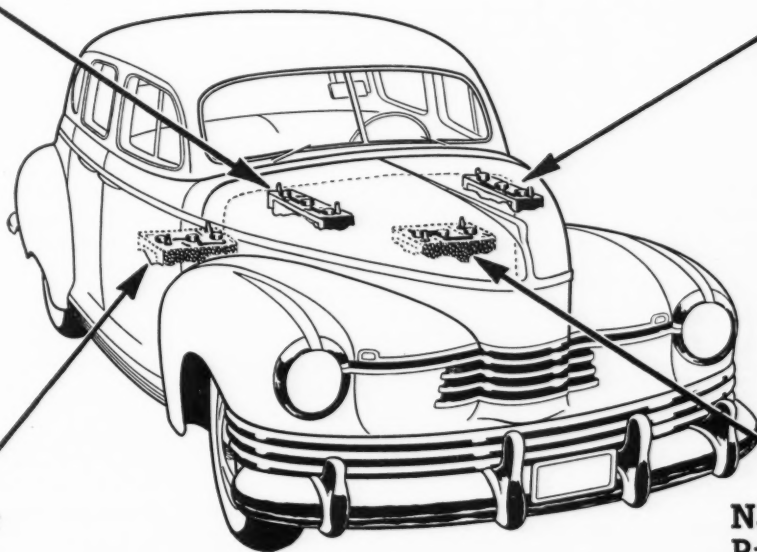
Under Seat

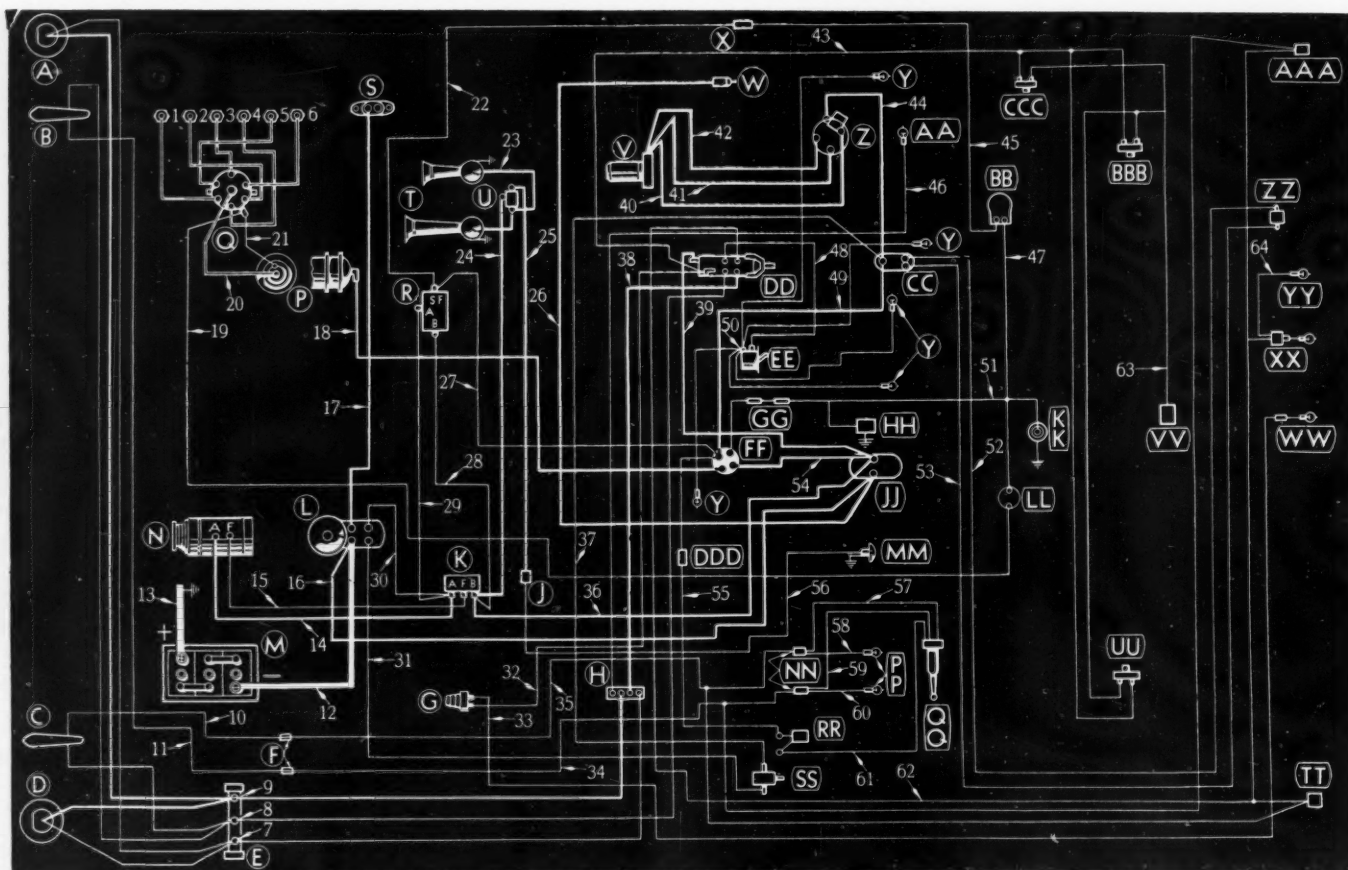
Nash Ambassador
6 and 8

Under Seat

Nash Ambassador 600
Packard (except Clipper)

Courtesy Electric Storage Battery Co.





Wiring Diagram of 1942 Chrysler, Model C-28

A—Headlight, right; B—Parking and direction light, right; C—Parking and direction light, left; D—Headlight, left; E—Light cable terminal block; F—Fender light cable connectors; G—Stop signal light switch; H—Headlight dimmer foot switch; J—Horn ring cable connector; K—Voltage and current regulator; L—Starter motor and solenoid; M—Battery; N—Generator; P—Ignition coil; Q—Ignition distributor; R—Generator feed relay (vacumatic trans. control); S—Automatic choke; T—Horns; U—Horn relay (dual horns); V—Windshield wiper motor; W—Cigar lighter; X—Fuse connector (vacumatic trans. control); Y—Instrument panel light; Z—Windshield wiper switch and circuit breaker.

AA—Headlight beam indicator light; BB—Vacuum unit solenoid (vacumatic trans. control); CC—Fuel gage (panel unit); DD—Main light switch and circuit breaker; EE—Instrument panel light switch; FF—Ignition

switch and lock; GG—Vacumatic trans. control cable connectors; HH—Throttle kick-down switch (vacumatic trans. control); JJ—Ammeter; KK—Governor switch (vacumatic trans. control); LL—Ignition interrupter switch (vacumatic trans. control); MM—Horn blowing ring; NN—Directional signal indicator light cable connectors; PP—Directional signal indicator lights; QQ—Directional signal light switch; RR—Directional signal flasher; SS—Starter switch; TT—Tail and directional signal light, left; UU—Reading light door switch, left (7 passenger); VV—Reading lamp; WW—Stop signal light and cable "Y" connector; XX—Rear license plate light and cable "Y" connector; YY—Rear storage compartment light; ZZ—Fuel gage (tank unit); AAA—Tail and directional signal light, right; BBB—Reading light door switch (7 passenger); CCC—Reading light pillar switch; DDD—Directional signal light fuse connector.

1-6—Spark plug cables; 7—Black; 8—Yellow; 9—Red; 10—Green; 11—Brown; 12—Starter cable—negative; 13—Battery ground cable—positive; 14—Red; 15—Green; 16—Red; 17—White; 18—Ignition lock switch cable; 19—Orange; 20—Secondary cable (high tension).

21—Primary cable (black); 22—Green; 23—Green; 24—Green; 25—Green; 26—Green; 27—Green; 28—Green; 29—Green; 30—Black and yellow; 31—Brown; 32—Red; 33—Red; 34—Brown; 35—Green; 36—Black; 37—Brown; 38—Yellow; 39—Brown; 40—Black.

41—Red; 42—Green; 43—Red; 44—Red; 45—Green; 46—Brown; 47—Yellow; 48—Black; 49—Blue; 50—Black; 51—Yellow; 52—Blue; 53—Black and yellow; 54—Brown; 55—Red; 56—Horn button cable and terminal; 57—Red; 58—Brown; 59—Brown; 60—Green; 61—Red; 62—White; 63—Yellow; 64—White.

of the principal causes of this trouble is loose brake backing plates on the front. They may appear to be tight, but it is always advisable to go over them again and be sure they are drawn up as tight as you can draw them.

After all else fails, there is still one thing you can do. That is to cut off about two inches of the lining at the bottom of the rear shoe of each front brake. Chamfer the remaining lining just as the original lining was.

NEWS FROM "DOWN UNDER"

MOTOR AGE Clearing House readers are found in all four corners of the globe. From our good friend C.

Cooper, of Cooper & Curd, Ltd., in far-off New Zealand, comes this insight into the life of the average automobile mechanic down there:

"The N. Z. Motor Trade Association, with the consent of the Government, have a set examination (partly oral and partly written) for mechanics. Examinations are held twice each year, and those who pass are issued an "A" grade certificate and entitled to 1d (\$.02 in American money) per hour more than the man who does not hold the certificate. Pre-war wages were 2/10d (approximately \$.60) per hour, and 2/11d (or \$.62) per hour for the "A" grade mechanic. Under war conditions, the Government granted what they termed a war bonus, which provided for

increasing the wages by 5 per cent.

"Hundreds of mechanics have joined the army, and it is becoming increasingly difficult to obtain a staff, and, to hold the men, increased wages have to be paid. Several of our men are paid 7 pounds for a week of 40 hours. (Note—At the present rate of exchange, the English pound is worth about \$4.05.)

"The restrictions on petrol were as follows: September, 1939—cars over 14 hp., 16 gal. per month. Cars 14 hp. and under, 8 gal. per month. August, 1914, for cars over 14 hp., 6 gal. per month, and for cars 14 hp. and under, 3 gal. per month."

(Thanks, Mr. Cooper, for a most interesting letter.—The Editors.)

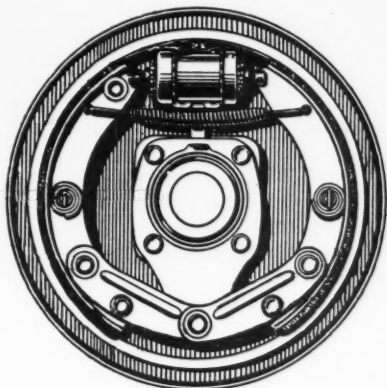
LOOSE BACKING PLATE?

A 1939 Chevrolet came into the shop with a thump in the front end. It occurred every time the car hit a bump, or the brakes were applied.

We checked all the front end, steering and tie rods, installed king pins and bushings, third arm bushings, but this did not help at all.

With the car jacked up, you can reproduce this noise by spinning the front wheels and then applying the brakes. Can you help us out? Steve Smetaniuk, Wissahickon Garage, Ambler, Pa.

I AM inclined to believe that this trouble is caused by backing plates that are loose where they are attached to the steering knuckle, and that they shift when the brakes are applied, causing this noise. There is another possibility, and that is the brake band



support plate might be loose where it is attached to the backing plate.

I suggest you jack up the front of this car and lock the brakes and then try to produce this noise by attempting to rock the front wheels. If the condition is bad, you should be able to produce it this way. But, if there is not much looseness in these units, you may not be able to get the noise, but still they may be loose enough to make the noise under normal operating conditions.

In addition to being loose at the backing plate, the shoe support plate pin at the bottom, to which the brake shoe articulating links are attached, may be worn so that it is allowing these links to shift when the brakes are applied. Some wear might also be present in the pins at the inner ends of the articulating links. All these points should be carefully checked.

OIL LEAK AT REAR OF ENGINE

Will you please give me all information you have on how to stop an oil leak in the rear main bearing of a 1936 Chevrolet?

Have installed rings and pins, ground valves, tightened all bearings but it still continues to leak oil like it did before it was worked on.

Have pulled it down two or three times, installed new cap and lower half of bearing, and even drilled a larger hole in the bearing cap, removed the check ball and grooved the bearing. Have also examined the plug at the end of the camshaft. This is about all I know to do unless I pull the motor and grind the crankshaft, and it looks smooth. Bearing has never been burned out. M. W. McMichael, Atlanta, Ga.

SINCE you have carefully checked the rear main bearing, I am wondering if this condition might not be caused by pressure being built up in

the crankcase due to blow-by. It sometimes happens that, when new rings are installed, the blow-by is quite excessive, and it is sometimes necessary to put a shim behind the top compression ring to make the ring fit tighter in the groove.

There is another point that should be checked and that is the condition of the strainer on the breather pipe. I suggest that you take this off and wash it out thoroughly in gasoline to be sure it is clean so that it will provide a vent for any pressure that might be built up in the crankcase. This sometimes does the trick without additional work.

**Replace it
with a New Departure**

**... the same bearing that
competent engineers choose
for the majority of original
installations.**

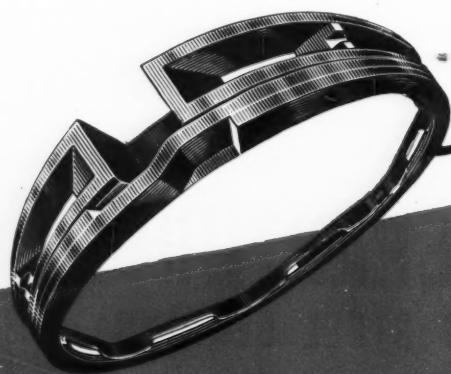
Authorized replacement bearing
service wherever you see this
sign. Authentic records—complete
stocks—sudden service.

NEW DEPARTURE
THE FORGED STEEL BEARING

YOUR BEST XMAS PRESENT

IS ONE YOU CAN GIVE YOURSELF!

No other package you get can possibly mean so much as this one. For wrapped up in this package is the one ring assembly that is truly different in design and performance . . . the one ring that Bridges the Gap . . . the ring whose basic Ramco principles are now adopted for original equipment by a leading car manufacturer . . . the one ring backed by the strongest guarantee ever placed back of a replacement piston ring . . . the Ramco 10,000 Mile Ring and Labor Guarantee. Added to all this . . . to sweeten your profit and give added incentive to servicemen . . . are the many Ramco Special Deals. You get the entire package when you use Ramco 10-Up on that next ring job. See your Jobber today.



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SERVICE

FROM THE

Dust Covers

One cause of rapid brake-lining and brake-drum wear is the entry of dust, dirt and mud into the brake housing. Most of this gets into the brake through the adjusting hole in the brake backing plate. When the



car was delivered from the factory, this hole was plugged with a removable metal or rubber plug to seal the opening. Careless mechanics neglect to replace this plug after a brake adjustment.

Pontiac, in its Service News Bulletin, has called attention to the necessity of installing new plugs where the old ones have been lost. The plug supplied by Pontiac is made of rubber, and fits tightly in the opening. It can be easily installed by moistening it (dipping in brake fluid is a good way), inserting one end in the opening and force the plug in with a light tap of a hammer or by prying with a screw driver.

Bearing Lubrication

The rear axle shaft bearings of the 1942 Buick are Hyatt roller bearings. Outer races are a light press fit to free fit in the axle housing.

Every 10,000 miles remove the rear wheel, wheel hub and drum assembly, and lubricate the bearing, using the regular wheel-bearing lubricant. Quantity required is equal to one tablespoonful.

Checking Toe-in

When setting toe-in on the 1942 Plymouth, it is important that the clamp bolt on the inner end of the long tie rod be on the under side of the tie rod. Otherwise it may interfere with the oil pan on extreme turns.

Toe-in should be from 0 to 1/16 in., and is obtained by first setting the steering wheel so that the road wheels are straight ahead. (The center spoke of the steering wheel should be

HINTS

FACTORIES

straight down.) Then loosen the clamp bolts on both tie rods and turn the rods so that both front wheels are exactly straight ahead. Next, turn both rods an equal amount to make both wheels have the same amount of toe-in, the total not to be more than 1/16 in.

Serial Numbers

Engine serial numbers of the 1942 Plymouth are located on the left front side of the cylinder block opposite No. 1 cylinder.

When the letter "A" appears after the engine number, it indicates "special standard" cylinder bores, which are .020 in. larger than standard.

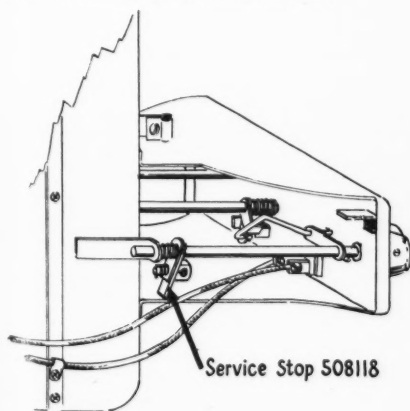
When the letter "B" appears after the engine number, it indicates "special standard" main and connecting rod bearings, which are .010 in. smaller than standard.

When the letters "AB" appear after the engine serial number they indicate an engine with .020 in. oversize cylinders and .010 in. undersize main and connecting rod bearings.

Heater Control May Cause Short

Pontiac advises that the early production underseat heater defrosters had the stop for the air control button improperly located. If the air control button is forced to the full limit of travel in a clockwise direction, one of the control rods will short against the instrument panel light switch.

To overcome this condition, Pontiac has released a stop, part No. 508118, which should be installed as shown in the accompanying illustration.



RAMCO 10up
IT BRIDGES THE GAP!
PISTON RINGS AND PISTON EXPANDERS

See your Ramco Jobber or write, Ramsey Accessories Mfg. Corp., 3711 Forest Park Blvd., St. Louis, Mo. In Canada: 144 Front Street, W., Toronto, Ontario.

Mechanical Specifications

These Specifications Are Brought Up-to-Date Each Month by the
Car Manufacturers and Supersede All Others Previously Published

PASSENGER CAR MAKE AND MODEL	Lowest Priced 4-Door Sedan (Delivered)	Wheelbase (In.)	Tire Size (In.)	No. of Cylinders, Bore and Stroke	ENGINE															CHASSIS				
					Taxable Hp.	Piston Displacement (Cu. In.)	Maximum Brake Hp. at Specified R.P.M.	Compression Ratio (to-1)	Displacement Factor †	Cylinder Head Material	Cams/Shaft Drive Make	Piston Material	Oil Cleaner Make	Air Cleaner Make	Carburetor Make	Muffler Make	Electrical System Make	Battery Make	Clutch—Type and Make	Universal Joint Type and Make	Rear Axle		Front Spring Suspension	
																					Type and Make	Ratio (Std.)		
Buick-Special..... 42-40A	1171	119	6.50/15	8-3 1/8 x 4 1/8	30.6	243.0	110-3400	6.00	34.5	CI	LB	CI	AC	AC	S-C	Hay	DR	DR	Obl	Mp-SS	1 1/2	Own	4.10	IC
Buick-Ex. Spec..... 42-40B	1213	121	6.50/16	8-3 1/8 x 4 1/8	30.6	248.0	110-3400	6.00	36.1	CI	LB	CI	AC	AC	S-C	Hay	DR	DR	Obl	Mp-SS	1 1/2	Own	4.40	IC
Buick-Super..... 42-50	1391	124	6.50/16	8-3 1/8 x 4 1/8	30.6	248.0	118-3600	6.30	35.0	CI	LB	CI	AC	A-H	S-C	Hay	DR	DR	Obl	Mp-SS	1 1/2	Own	4.40	IC
Buick-Century..... 42-60	1465	126	7.00/15	8-3 1/8 x 4 1/8	37.8	320.2	165-3800	6.70	38.6	CI	LB	AI	AC	A-H	S-C	Hay	DR	DR	Obl	Mp-S	1 1/2	Own	3.90	IC
Buick-Roadmaster..... 42-70	1601	129	7.00/15	8-3 1/8 x 4 1/8	37.8	320.2	165-3800	6.70	39.8	CI	LB	AI	AC	A-H	S-C	Hay	DR	DR	Obl	Mp-S	1 1/2	Own	4.10	IC
Buick-Limited..... 42-90	2418	139	7.50/16	8-3 1/8 x 4 1/8	37.8	320.2	165-3800	6.70	36.3	CI	LB	AI	AC	A-H	S-C	Hay	DR	DR	Obl	Mp-S	1 1/2	Own	4.55	IC
Cadillac..... 61, 62, 63, 60S	1647	(a)	7.00/15	8-3 1/8 x 4 1/8	39.2	346.0	150-3400	7.25	39.9	CI	LB	AI	None	AC	S-C	Wal	DR	DR	Long	Nb-Mec	1 1/2	Own	3.77	IC
Cadillac..... 67, 75	2896	139-136	7.50/16	8-3 1/8 x 4 1/8	39.2	346.0	150-3400	7.25	37.0	CI	LB	AI	None	AC	S-C	Wal	DR	DR	Long	Nb-Mec	1 1/2	Own	4.27	IC
Chevrolet.....		116	6.00/16	6-3 1/8 x 3 3/4	29.4	216.5	90-3300	6.50	35.4	CI	Var	CI	None	AC	Car	Var	DR	DR	Inl	M-Own	1 1/2	Own	4.11	IC
Chrysler-Roy. & Win. C-34	1177	121 1/2	6.25/16	6-3 1/8 x 4 1/8	28.3	250.6	120-3800	6.60	34.9	CI	Mor	CI	Pur	AC	Car	AL	Wil	B&B	.....	1 1/2	Own	3.91	IC	
Chrysler-Sar. & N.Y. C-36	1405	127 1/2	7.00/15	8-3 1/8 x 4 1/8	33.8	323.5	140-3600	6.80	40.6	CI	Whit	AI	Pur	AC	Str	AL	AL	B&B	.....	1 1/2	Own	3.91	IC	
Chrysler-Cr. Imp. C-37		145 1/2	7.50/15	8-3 1/8 x 4 1/8	33.8	323.5	140-3600	6.80	.....	CI	Whit	AI	Pur	AC	Str	AL	AL	B&B	.....	1 1/2	Own	3.58	IC	
Crosley..... 42		80	4.25/12	2-3x2 1/2	7.2	35.3	12-4000	5.60	.....	CI	.....	CI	None	AC	Til	Own	AL	AL	Rock	Mp-S	1 1/2	Spi	5.14	C
De Soto-DeL. & Cus. S-10	1103	121 1/2	5.25/16	6-3 1/8 x 4 1/8	28.3	236.6	115-3800	6.60	34.5	CI	Mor	CI	Pur	.....	Car	.....	AL	Wil	B&B	Rb-	1 1/2	Own	3.91	IC
Dodge-DeL. & Cus. D-22	998	119 1/2	6.00/16	6-3 1/8 x 4 3/8	25.3	230.2	105-3600	6.70	36.8	CI	Mor	AI	Pur	.....	Str	.....	AL	AL	B&B	Bt-	1 1/2	Own	4.10	IC
Ford..... Six	850	114	6.00/16	6-3.30x4.40	26.1	226.0	90-3300	6.70	34.8	CI	Dia	CS	.....	.....	Own	.....	.....	.....	Nb-Spi	.....	3/4	Own	3.78	Tr
Ford..... V-8	860	114	6.00/16	8-3.06x3.75	30.0	221.0	90-3800	6.20	33.9	CI	Dia	CS	.....	.....	Own	.....	.....	.....	Long	Nb-Spi	3/4	Own	3.78	Tr
Hudson-6 & 6 DeL..... 20		116	(d)	6-3x4 1/8	21.6	175.0	92-4000	7.25	34.4	CI	Dia	.....	None	AC	Car	Old	AL	Nat	Own	Nb-Spi	1 1/2	Own	4.55	IC
Hudson-Sup. & Com. 6.21-22		121	(e)	6-3x5	21.6	212.0	102-4000	6.50	35.1	CI	Dia	.....	None	AC	Car	Old	AL	Nat	Own	Nb-Spi	1 1/2	Own	4.11	IC
Hudson-Comm. 8..... 24-25		121	(f)	8-3x4 1/8	28.8	254.0	129-4200	6.50	39.4	CI	Dia	.....	None	AC	Car	Old	AL	Nat	Own	Nb-Spi	1 1/2	Own	4.11	IC
Hudson-Com. Cus. 8..... 27		128	6.50/15	8-3x4 1/8	28.8	254.0	128-4200	6.50	37.8	CI	Dia	.....	None	AC	Car	Old	AL	Nat	Own	Nb-Spi	1 1/2	Own	4.55	IC
Lincoln-Zeph. & Cont..... 11700		125	7.00/15	12-2.93x3.75	41.4	305.0	130-3800	7.00	40.7	CI	.....	CS	.....	.....	Own	Own	Own	Own	Long	Nb-Spi	3/4	Own	4.44	Tr
Lincoln-Custom..... 12950		138	7.00/15	12-2.93x3.75	41.4	305.0	130-3800	7.00	37.3	CI	.....	CS	.....	.....	Own	Own	Own	Own	Long	Nb-Spi	3/4	Own	4.44	Tr
Mercury.....	11065	118	6.50/15	8-3.18x3.75	32.5	239.0	100-3600	6.40	31.7	CI	.....	CS	.....	.....	Own	Own	Own	Own	Long	Sb-Spi	3/4	Own	3.54	Tr
Nash-Amb. 600..... 4240	968	112	5.50/16	6-3 1/8 x 3 3/8	23.4	172.6	75-3600	6.87	33.4	CI	W-D	AI	.....	AC	Car	Wal	DR	AL	B&B	-Mec	1 1/2	Own	4.11	IC
Nash-Amb. Six..... 4260	1134	121	6.25/16	6-3 1/8 x 4 3/8	27.3	234.8	105-3400	6.50	35.9	CI	W-D	AI	AC	AC	Car	.....	AL	AL	B&B	-Mec	1 1/2	Own	4.11	IC
Nash-Amb. 8..... 4280	1184	121	6.50/16	8-3 1/8 x 4 1/8	31.2	260.8	115-3400	6.60	37.9	CI	W-D	AI	.....	.....	Car	.....	AL	AL	B&B	M-Mec	1 1/2	Own	4.11	IC
Oldsmobile..... Special 6	1088	119	6.00/16	6-3 1/8 x 4 1/8	29.4	238.1	100-3400	6.50	37.0	CI	Whit	AS	None	AC	Car	Var	DR	DR	B&B	M-Mec	1 1/2	Own	4.11	IC
Oldsmobile..... Dynamic 6	1153	125	6.50/15	6-3 1/8 x 4 1/8	29.4	238.1	100-3400	6.50	36.4	CI	Whit	AS	None	AC	Car	Var	DR	DR	B&B	M-Mec	1 1/2	Own	4.30	IC
Oldsmobile..... Special 8	1130	119	6.50/15	8-3 1/8 x 3 3/8	33.8	257.1	110-3600	6.50	35.7	CI	LB	AS	None	AC	Car	Var	DR	DR	B&B	M-Mec	1 1/2	Own	3.90	IC
Oldsmobile..... Dynamic 8	1196	125	6.50/16	8-3 1/8 x 3 3/8	33.8	257.1	110-3600	6.50	38.1	CI	LB	AS	None	AC	Car	Var	DR	DR	B&B	M-Mec	1 1/2	Own	4.30	IC
Oldsmobile..... Custom 8	1376	127	7.00/15	8-3 1/8 x 3 3/8	33.8	257.1	110-3600	6.50	.....	CI	LB	AS	None	AC	Car	Var	DR	DR	B&B	M-Mec	1 1/2	Own	4.30	IC
Packard-6..... 2000-10-20	1286	120-122	6.50/15	6-3 1/8 x 4 1/8	29.4	245.0	105-3600	6.71	37.7	CI	M-R	AI	.....	AC	Car	.....	AL	A-W	Long	Rb-UP	1 1/2	Own	4.30	IC
Packard-8..... 2001-11-21	1341	120-127	(b)	8-3 1/8 x 4 1/8	33.8	282.0	125-3600	6.85	40.1	CI	M-R	AI	.....	AC	Car	.....	AL	A-W	Long	Rb-Mec	1 1/2	Own	(g)	IC
Packard-Sup. 8 2003-23-4-5	1739	127-38-48	(c)	8-3 1/8 x 4 3/8	33.8	356.0	165-3600	6.85	43.7	CI	Mor	AI	.....	AC	Car	.....	AL	AL	Long	Rb-Mec	1 1/2	Own	(h)	IC
Pack'd-Cus. Sup. 8 2006-7-8	2271	127-38-48	(d)	8-3 1/8 x 4 3/8	33.8	356.0	165-3600	6.85	43.5	CI	Mor	AI	.....	AC	Car	.....	AL	AL	Long	Rb-Mec	1 1/2	Own	(h)	IC
Plymouth..... P-14	889	117	6.00/16	6-3 1/8 x 4 3/8	25.3	217.8	95-3400	6.80	34.7	CI	Mor	CI	Pur	.....	Car	.....	AL	AL	B&B	Bt-	1 1/2	Own	3.90	IC
Pontiac-Torpedo 6..... 42-25	1062	119	6.00/16	6-3 1/8 x 4	30.4	239.2	90-3200	6.50	37.2	CI	Mor	CN	None	AC	Car	Var	DR	DR	Inl	Rb-SM	1 1/2	Own	4.10	IC
Pontiac-Stream. 6..... 42-26	1118	122	6.50/16	6-3 1/8 x 4	30.4	239.2	90-3200	6.50	37.0	CI	Mor	CN	None	AC	Car	Var	DR	DR	Inl	Rb-SM	1 1/2	Own	4.30	IC
Pontiac-Torpedo 8..... 42-27	1088	119	6.00/16	8-3 1/8 x 3 3/8	33.8	248.9	103-3500	6.50	38.2	CI	Mor	CN	None	AC	Car	Var	DR	DR	Inl	Rb-SM	1 1/2	Own	4.10	IC
Pontiac-Stream. 8..... 42-28	1144	122	6.50/16	8-3 1/8 x 3 3/8	33.8	248.9	103-3500	6.50	37.9	CI	Mor	CN	None	AC	Car	Var	DR	DR	Inl	Rb-Sm	1 1/2	Own	4.30	IC
Studebaker-Champ. 6..... 4G	870	.....	5.50/16	6-3x4	21.6	169.6	80-4000	6.50	34.3	CI	Dia	CI	None	AC	Car	Wal	AL	Wil	B&B	M-Spi	1 1/2	Spi	4.10	IT
Studebaker-Com. 8..... 12A	1128	.....	6.25/16	6-3 1/8 x 4 3/8	26.3	226.2	94-3600	6.50	35.0	CI	Dia	CI	Fram	AC	Str	Wal	AL	Wil	B&B	M-Spi	1 1/2	Spi	4.09	IT
Studebaker-Pres. 8..... 8C	1262	.....	7.00/15	8-3 1/8 x 4 1/8	30.0	250.4	117-4000	6.50	35.1	CI	Dia	CI	Fram	AC	Str	Wal	AL	Wil	Inl	M-Spi	1 1/2	Spi	4.09	IT
Willys-American..... 42	811	104	5.50/16	4-3 1/8 x 4 3/8	15.6	134.2	63-3900	6.48	32.1	CI	LB	CI	None	AC	Car	Mc	AL	AL	B&B	M-UP	1 1/2	Own	4.44	1/2 E

ABBREVIATIONS:

1 1/2—Semi-floating
3/4—Three-quarter floating
1 1/2 E—Semi-elliptic
†—Computed on basis of engine displacement, rear axle ratio, effective tire diameter and shipping weight plus 500 pounds
‡—Exclusive of Federal taxes
(a)—Models 61, 63—126 in., 62—129 in., 60S—133 in.
(b)—Models 2001-11, 6.50/15; Model 2021, 7.00/15
(c)—Models 2003-23, 7.00/15; Model 2004-5, 7.00/16
(d)—Six, 5.50/16; Six DeL., 6.00/16

(e)—6.00/16 on Model 21; 6.25/16 on Model 22
(f)—6.25/16 on Model 24; 6.50/15 on Model 25
(g)—Model 2001, 4.10; Model 20221, 4.09
(h)—Models 2003-6-23, 3.92; Models 2004-7, 4.09; Models 2005-8, 4.36
AC—AC Spark Plug Co.
A-H—AC Spark Plug Co. and Hayes Industries
Al—Aluminum
AL—The Electric Auto-Lite Co.
AS—Armasteel
A-W—Auto-Lite and Willard
B&B—Borg & Beck Division

Bt—Ball and trunnion type
C—Conventional
Car—Carter Carburetor Corp.
CI—Cast Iron
CN—Chrome Nickel
CS—Cast Steel
Dia—Continental Diamond Fibre Co.
DR—Delco-Remy Division
Hay—Hayes Industries, Inc.
IC—Independent coil spring
Inl—Inland Mfg. Co. with Long disc
IT—Independent transverse
LB—Link Belt Co.
Long—Long Mfg. Div.
M—Metal with anti-friction bearings
Mc—MacKenzie Muffler Co.

Mec—Mechanics Universal Joint Div.
Mor—Morse Chain Co.
MP—Metal with plain bearings
M-R—Morse or Ramsey
M-W—Morse or Whitney
Nat—National Battery Co.
Nb—Needle bearing
NS—Nobility Sparks Co.
Obl—Own clutch, Borg & Beck or Long disc
Old—Oldberg Mfg. Co.
Pur—Purulator Products, Inc.
Rb—Roller bearing
Rock—Rockford Drilling Machine Div.
S—Saginaw Steering Gear Div.

Sb—Steel bushing
S-C—Stromberg and Carter
S-M—Saginaw and Mechanics
Spi—Spicer Mfg. Co.
S-S—Saginaw and Spicer
Str—Stromberg Carburetor
Til—Tillotson Mfg. Co.
Tr—Transverse
UP—Universal Products Co.
Var—Various
Wal—Walker Mfg. Co.
W-D—Whitney and Diamond Chain Co.
Whit—Whitney Mfg. Co.
Wil—Willard Storage Battery Co.

Tune-Up Specifications

These Specifications Are Brought Up-to-Date Each Month by the
Car Manufacturers and Supersede All Others Previously Published

PASSENGER CAR MAKE AND MODEL	Compression Pressure at Cranking Speed (Lb.)	PISTON RINGS		VALVES						IGNITION						Capacity Cooling System (Qts.)	FRONT AXLE							
		No. and Width Compression	No. and Width Oil	Inlet—Seat Angle (Deg.)	Exhaust—Seat Angle (Deg.)	Stem Diameter	Operating Tappet Clearance		Timing	Spark Plug	Breaker Point Gap (In.)	Cam Angle (Deg.)	Timing Marks Located On—	Rods Removed From	Capacity Crankcase (Qts.)		Caster (Deg.)	Camber (Deg.)	Toe-in (In.)	King Pin Inclination (Deg.)				
							Inlet	Exhaust													Make and Model	Gap (In.)	Spark Occurs °T.C.	Timing Marks Located On—
Buick-Special..... 42-40A	112	2- $\frac{3}{32}$	2- $\frac{3}{16}$	45 45	.371	.015H	.015H	13B	22A	AC-46	.025 .015	31	4B	Fly	A	8	13	N $\frac{1}{8}$ to + $\frac{1}{16}$	0- $\frac{1}{16}$	3 $\frac{1}{2}$ to 4 $\frac{1}{4}$				
Buick-Ex. Spec. 42-40B	112	2- $\frac{3}{32}$	2- $\frac{3}{16}$	45 45	.371	.015H	.015H	13B	22A	AC-46	.025 .015	31	4B	Fly	A	8	13	N $\frac{1}{8}$ to + $\frac{1}{16}$	0- $\frac{1}{16}$	3 $\frac{1}{2}$ to 4 $\frac{1}{4}$				
Buick-Super..... 42-50	115	2- $\frac{3}{32}$	2- $\frac{3}{16}$	45 45	.371	.015H	.015H	13B	22A	AC-46	.025 .015	31	6B	Fly	A	8	13	N $\frac{1}{8}$ to + $\frac{1}{16}$	0- $\frac{1}{16}$	3 $\frac{1}{2}$ to 4 $\frac{1}{4}$				
Buick-Century..... 42-60	115	2- $\frac{3}{32}$	2- $\frac{3}{16}$	45 45	.371	.015H	.015H	14B	25A	AC-46	.025 .015	31	6B	Fly	A	10	16 $\frac{3}{4}$	N $\frac{1}{8}$ to + $\frac{1}{16}$	0- $\frac{1}{16}$	3 $\frac{1}{2}$ to 4 $\frac{1}{4}$				
Buick-Roadmaster..... 42-70	115	2- $\frac{3}{32}$	2- $\frac{3}{16}$	45 45	.371	.015H	.015H	14B	25A	AC-46	.025 .015	31	6B	Fly	A	10	16 $\frac{3}{4}$	N $\frac{1}{8}$ to + $\frac{1}{16}$	0- $\frac{1}{16}$	3 $\frac{1}{2}$ to 4 $\frac{1}{4}$				
Buick-Limited..... 42-90	115	2- $\frac{3}{32}$	2- $\frac{3}{16}$	45 45	.371	.015H	.015H	14B	25A	AC-46	.025 .015	31	6B	Fly	A	10	18	N $\frac{1}{8}$ to + $\frac{1}{16}$	0- $\frac{1}{16}$	4 $\frac{1}{4}$				
Cadillac..... 61, 62, 63, 60S	182x	2-(a)	2- $\frac{5}{16}$	45 45	.341	AA	AA	AA	TC	10A	AC-104	.030 .015	31	5B	TD	A	7	25	N1 $\frac{3}{4}$ to N2 $\frac{3}{4}$	N $\frac{3}{8}$ to + $\frac{3}{8}$	5° 51'			
Cadillac..... 67, 75	182x	2-(a)	2- $\frac{5}{16}$	45 45	.341	AA	AA	AA	TC	10A	AC-104	.030 .015	31	5B	TD	A	7	25	N1 $\frac{3}{4}$ to N2 $\frac{3}{4}$	N $\frac{3}{8}$ to + $\frac{3}{8}$	5° 51'			
Chevrolet.....		2- $\frac{1}{16}$	1- $\frac{1}{16}$	30 30	.341	.006H	.013H	.006	3B	5A	AC-104	.040 .018	39	5B	Fly	A	5 $\frac{1}{2}$	15	0 to + $\frac{1}{2}$	N $\frac{1}{4}$ to $\frac{1}{2}$	4 $\frac{1}{4}$			
Chrysler-Roy. & Win. C-34	125	2- $\frac{3}{32}$	2- $\frac{5}{16}$	45 45	.340	.008H	.010H	.014	12B	5A	AL-A7	.025 .020	34-38	2A	VD	A	5	18	N1 to +1	0 to + $\frac{3}{4}$	4 $\frac{1}{4}$ to 6			
Chrysler-Sar. & N.Y. C-36	125	2- $\frac{3}{32}$	2- $\frac{5}{16}$	45 45	.340	.008H	.010H	.011	6B	12A	AL-A7	.025 .018	27-30	VD	A	6	26	N1 to +1	0 to + $\frac{3}{4}$	4 $\frac{1}{4}$ to 6				
Chrysler-Cr. Imp. C-37	125	2- $\frac{3}{32}$	2- $\frac{5}{16}$	45 45	.340	.008H	.010H	.011	6B	12A	AL-A7	.025 .018	27-30	VD	A	6	26	N1 to +1	0 to + $\frac{3}{4}$	4 $\frac{1}{4}$ to 6				
Crosley.....	80	2- $\frac{1}{16}$	1- $\frac{1}{16}$	45 45	.311	.007C	.009C	.009	20B		AL-A5	.025 .020	46	TC	Fly	A	3		6 $\frac{1}{2}$ to 11	2	6 $\frac{1}{2}$			
De Soto-DeL. & Cus. S-10	125	2- $\frac{3}{32}$	2- $\frac{5}{16}$	45 45	.340	.008H	.010H	.014	12B	6A	AL-A7	.025 .020	34-38	4A	VD	A	5	18	N1 to +1	0 to + $\frac{3}{4}$	4 $\frac{1}{4}$ to 6			
Dodge-DeL. & Cus. D-22	125	2- $\frac{3}{32}$	2- $\frac{5}{16}$	45 45	.340	.008H	.010H	.014	12B	6A	AL-A7	.025 .020	34-38	2A	VD	A	5	15	N1 to +1	0 to + $\frac{3}{4}$	4 $\frac{1}{4}$ to 6			
Ford..... Six		2- $\frac{3}{32}$	1- $\frac{1}{16}$	45 45	.311	.013C	.013C	.013	3B	6A		.032 .015						8	1	$\frac{1}{8}$	8			
Ford..... V-8	140y	2-(c)	1-(d)	45 45	.311	.012C	.015C	.015	TC	6A	Ch-H-10	.025 .015		4B	DH	A		22	8	1	$\frac{1}{8}$	8		
Hudson-6 & Super 6..... 20	125	2- $\frac{3}{32}$	2- $\frac{5}{16}$	45 45	.341	.010H	.012H	.012	27 $\frac{1}{2}$ B	32 $\frac{1}{2}$ A	Ch-J-9	.038 .020	34	2B	Fly	A	6	13	0 to $\frac{1}{4}$	$\frac{1}{2}$ to $\frac{3}{4}$	3" 38'			
Hudson-Sup. & Com. 6.21-22	120	2- $\frac{3}{32}$	2- $\frac{5}{16}$	45 45	.341	.006H	.008H	.010	18 $\frac{1}{2}$ A	18 $\frac{1}{2}$ A	Ch-J-9	.038 .020	34	2B	Fly	A	6	13	0 to $\frac{1}{4}$	$\frac{1}{2}$ to $\frac{3}{4}$	3" 38'			
Hudson-Comm. 8..... 24-25	119	2- $\frac{3}{32}$	2- $\frac{5}{16}$	45 45	.341	.006H	.008H	.010	18 $\frac{1}{2}$ B	18 $\frac{1}{2}$ A	Ch-J-9	.038 .017	30 $\frac{1}{2}$	TC	Fly	A	9	18	0 to $\frac{1}{4}$	$\frac{1}{2}$ to $\frac{3}{4}$	3" 38'			
Hudson-Comm. Cus. 8..... 27	119	2- $\frac{3}{32}$	2- $\frac{5}{16}$	45 45	.341	.006H	.008H	.010			Ch-J-9	.038 .017	30 $\frac{1}{2}$	TC	Fly	A	9	18	0 to $\frac{1}{4}$	$\frac{1}{2}$ to $\frac{3}{4}$	3" 38'			
Lincoln-Zeph. & Cont.....		2- $\frac{3}{32}$	1- $\frac{1}{16}$	45 45	.311	.013C	.013C	.013	10 $\frac{1}{2}$ B		Ch-H-10	.029 .015		4B	DH	A	5	27	3 to 5	$\frac{1}{4}$ to $\frac{3}{4}$	3 $\frac{3}{4}$ -4 $\frac{1}{4}$			
Lincoln-Custom.....		2- $\frac{3}{32}$	1- $\frac{1}{16}$	45 45	.311	.013C	.013C	.013	10 $\frac{1}{2}$ B		Ch-H-10	.029 .015		4B	DH	A	5	27	3 to 5	$\frac{1}{4}$ to $\frac{3}{4}$	3 $\frac{3}{4}$ -4 $\frac{1}{4}$			
Mercury.....	100	2- $\frac{3}{32}$	1- $\frac{1}{16}$	45 45	.311	.011C	.011C	.011	TC		Ch-H-10	.025 .015		4B	DH	A	5	22	3 to 5	$\frac{1}{4}$ to $\frac{3}{4}$	8			
Nash-Amb. 600..... 4240	120	2- $\frac{3}{32}$	1- $\frac{1}{16}$	45 45	.341	.015	.015	.019	19B	23A	AL-AN7	.025 .020		TC		A	5	14	0 to $\frac{1}{2}$	0 to $\frac{1}{2}$	5 $\frac{1}{2}$			
Nash-Amb. Six..... 4260	125	2- $\frac{3}{32}$	1- $\frac{1}{16}$	45 45	.372	.015	.015	.015	14B	31A	AC-45	.025 .020		4B	VD	A	6	17	0 to $\frac{1}{2}$	$\frac{1}{4}$ to $\frac{3}{4}$	5 $\frac{1}{2}$			
Nash-Amb. 8..... 4280	110	2- $\frac{3}{32}$	2-(e)	45 45	.372	.015	.015	.015	14B	31A	AC-	.025 .020		7B	VD	A	7	16	0 to N $\frac{1}{2}$	$\frac{1}{4}$ to $\frac{3}{4}$	4 $\frac{1}{2}$			
Oldsmobile..... Special 6	115	2- $\frac{3}{32}$	2- $\frac{1}{16}$	30 45	.342	.008	.011	.012	5B	5A	AC-44	.040 .020		TC	Fly	A	5	18 $\frac{1}{2}$	0 to N $\frac{3}{4}$	N $\frac{1}{4}$ to + $\frac{3}{4}$	4 51 $\frac{1}{8}$			
Oldsmobile..... Dynamic 6	115	2- $\frac{3}{32}$	2- $\frac{1}{16}$	30 45	.342	.008	.011	.012	5B	5A	AC-44	.040 .020		TC	Fly	A	5	18 $\frac{1}{2}$	0 to N $\frac{3}{4}$	N $\frac{1}{4}$ to + $\frac{3}{4}$	4 51 $\frac{1}{8}$			
Oldsmobile..... Special 8	107	2- $\frac{3}{32}$	2- $\frac{1}{16}$	30 45	.342	.008	.011	.012	TC	10A	AC-44	.030 .015		2B	Fly	A	6	20 $\frac{1}{2}$	0 to N $\frac{3}{4}$	N $\frac{1}{4}$ to + $\frac{3}{4}$	4 51 $\frac{1}{8}$			
Oldsmobile..... Dynamic 8	107	2- $\frac{3}{32}$	2- $\frac{1}{16}$	30 45	.342	.008	.011	.012	TC	10A	AC-44	.030 .015		2B	Fly	A	6	20 $\frac{1}{2}$	0 to N $\frac{3}{4}$	N $\frac{1}{4}$ to + $\frac{3}{4}$	4 51 $\frac{1}{8}$			
Oldsmobile..... Custom 8	107	2- $\frac{3}{32}$	2- $\frac{1}{16}$	30 45	.342	.008	.011	.012	TC	10A	AC-44	.030 .015		2B	Fly	A	6	20 $\frac{1}{2}$	0 to N $\frac{3}{4}$	N $\frac{1}{4}$ to + $\frac{3}{4}$	4 51 $\frac{1}{8}$			
Packard-6..... 2000-10-20		2-(f)	2- $\frac{1}{16}$	30 45	.339	.007H	.010H	.012	1B	5A	(g)	.028 .020		4B	VD	A	5	14	N1 to $\frac{1}{2}$	$\frac{1}{4}$ to $\frac{1}{2}$	0- $\frac{1}{2}$ -0 5° 35'			
Packard-8..... 2001-11-21		2-(f)	2- $\frac{1}{16}$	30 45	.339	.007H	.010H	.012	1B	5A	(g)	.028 .015		5B	VD	A	5 $\frac{1}{2}$	17	N1 to $\frac{1}{2}$	$\frac{1}{4}$ to $\frac{1}{2}$	0- $\frac{1}{2}$ -0 5° 35'			
Packard-Sup. 8 2003-23-4-5		2-(f)	2- $\frac{1}{16}$	30 45	.340	AA	AA	AA	4B	10A	(g)	.028 .015		4B	VD	A	7	20	N2 to $\frac{1}{2}$	$\frac{1}{4}$ to $\frac{1}{2}$	0- $\frac{1}{2}$ -0 5° 35'			
Pack'd-Sup. 8..... 2006-7-8		2-(f)	2- $\frac{1}{16}$	30 45	.340	AA	AA	AA	4B	10A	(g)	.028 .015		4B	VD	A	7	20	N2 to $\frac{1}{2}$	$\frac{1}{4}$ to $\frac{1}{2}$	0- $\frac{1}{2}$ -0 5° 35'			
Plymouth..... P-14	125	2- $\frac{3}{32}$	2- $\frac{5}{16}$	45 45	.340	.008H	.010H	.014	12B	6A	AL-A7	.025 .020	34-38	3B	VD	A	5	15	N1 to +1	0 to + $\frac{3}{4}$	4 $\frac{1}{4}$ -6			
Pontiac-Torpedo 6..... 42-25	160x	2- $\frac{3}{32}$	1- $\frac{1}{16}$	30 45	.312	.012H	.012H	.015	5B	5A	AC-45	.025 .020	37	4B	Fly	A	6	18	$\frac{1}{2}$ to N1	0 to 1	5			
Pontiac-Stream. 6..... 42-26	160x	2- $\frac{3}{32}$	1- $\frac{1}{16}$	30 45	.312	.012H	.012H	.015	5B	5A	AC-45	.025 .020	37	4B	Fly	A	6	18	$\frac{1}{2}$ to N1	0 to 1	5			
Pontiac-Torpedo 8..... 42-27	158x	2- $\frac{3}{32}$	1- $\frac{1}{16}$	30 45	.312	.012H	.012H	.015	5B	5A	AC-45	.025 .015	31	4B	Fly	A	6	19 $\frac{1}{2}$	$\frac{1}{2}$ to N1	0	5			
Pontiac-Stream. 8..... 42-28	158x	2- $\frac{3}{32}$	1- $\frac{1}{16}$	30 45	.312	.012H	.012H	.015	5B	5A	AC-45	.025 .015	31	4B	Fly	A	6	19 $\frac{1}{2}$	$\frac{1}{2}$ to N1	0	5			
Studebaker-Champ..... 4G	105	2-(a)	1- $\frac{1}{16}$	45 45	.312	.016C	.016C	.020	15B	10A	Ch-J-9	.025 .020	35	2B	Fly	A	5	10 $\frac{1}{2}$	1 to 2	$\frac{1}{2}$ to $\frac{1}{2}$	5 $\frac{1}{2}$			
Studebaker-Com. 8..... 12A	105	2- $\frac{3}{32}$	1- $\frac{1}{16}$	45 45	.343	.016C	.016C	.020	15B	10A	Ch-J-9	.025 .020	35	2B	VD	A	6	13	N $\frac{1}{4}$ to N $\frac{3}{4}$	$\frac{1}{2}$ to $\frac{1}{2}$	5 $\frac{1}{2}$			
Studebaker-Pres. 8..... 8C	105	2- $\frac{3}{32}$	1- $\frac{1}{16}$	45 45	.343	.016C	.016C	.020	15B	10A	Ch-J-9	.025 .020	34	TC	VD	A	8	15	N $\frac{1}{4}$ to N $\frac{3}{4}$	$\frac{1}{2}$ to $\frac{1}{2}$	5 $\frac{1}{2}$			
Willis-American..... 42	111	2- $\frac{3}{32}$	1- $\frac{1}{16}$	45 45	.373	.014C	.014C	.020	9B		Ch-J-9	.030 .020	41	TC	Fly	A	4	11 $\frac{3}{4}$	3	2	$\frac{1}{2}$ - $\frac{3}{8}$	7 $\frac{1}{2}$		

ABBREVIATIONS:

(a)—Upper, $\frac{3}{32}$; lower, $\frac{1}{16}$
(c)—.0915—.0920
(d)—.1535—.1540

(e)—1- $\frac{1}{16}$; 1- $\frac{3}{16}$
(f)—1—.093 1—.124
(g)—AC-104 or Champion Y-4A
x—At 1000 rpm
y—At 2400 rpm

A—Above
AA—Automatic Adjustment
AC—AC Spark Plug Division
A—After Top Center
B—Before Top Center

C—Cold
Ch—Champion Spark Plug Co.
DH—Distributor Housing
Fly—Flywheel
H—Hot

N—Negative
TC—Top Center
TD—Timing Disc
VD—Vibration Damper

Motor Car Price, Weight and Body Table

Following are delivered prices at factory, as of Oct. 1, 1941, for cars with standard equipment and include all federal taxes with exception of Chrysler, Crosley, De Soto, Dodge, Ford, Lincoln, Mercury and Plymouth. Optional equipment, state or local taxes, transportation charges and finance charges are extra.

BODY, MAKE AND MODEL	Delivered Price	Shipping Weight	BODY, MAKE AND MODEL	Delivered Price	Shipping Weight	BODY, MAKE AND MODEL	Delivered Price	Shipping Weight	BODY, MAKE AND MODEL	Delivered Price	Shipping Weight	BODY, MAKE AND MODEL	Delivered Price	Shipping Weight	BODY, MAKE AND MODEL	Delivered Price	Shipping Weight
BUICK Special 40A Util. Coupe Corv. Coupe Sedan, 4d. Bus. Sedanet, 2d. Fam. Sedanet, 2d.	1076 1361 1171 1097 1134	3510 3650 3555 3510 3610	CHEVROLET (Continued) Fleetline BH Aerosedan, 2d. Sportmaster	Consult Local Dealer	3105 3165	DODGE (Continued) Custom Town Sedan Sedan, 7p. Limousine	1105 1395 1475	3280	LINCOLN-ZEPHYR Standard Sedan Club Coupe Coupe, 3p. Conv. Coupe	1700 1700 1650 2150	3980 3810 3790 2150	PACKARD Clipper Spec. 6-2000 Bus. Coupe Club Sedan Tour. Sedan	1216 1251 1286	3365 3415 3435	PONTIAC (Continued) Torpedo Six Sedan, 2d. Sedan, 4d., 6w. Sedan, 4d., 4w. Conv. Sed. Cpe.	1015 1062 1062 1251	3265 3305 3295
Special 40B Sedan, 4d. Bus. Sedanet, 2d. Fam. Sedanet, 2d. Est. Wagon	1213 1108 1166 1561	3760 3650 3705 3510	CHRYSLER Royal 6 Coupe Club Coupe Brougham, 2d. Sedan, 4d. Town Sedan Sedan, 8p. Limousine	1075 1168 1154 1177 1222 1535 1605	3350 3430 3455 3500 3505	FORD Special Six Coupe, 3p. Tudor Sedan Fordor Sedan De Luxe Six Coupe, 3p. Tudor Sedan Sedan Coupe Fordor Sedan	730 815 850 805 840 865 875	3033	Continental Cabriolet Coupe Custom Sedan Coupe, 3 p. Limousine	3000 3000 1795 1795 1735	4060 3980 3810 3790	Clipper Cust. 6-2010 Club Sedan Tour. Sedan Model 2020 Conv. Coupe Clipper Spec. 8-2001 Bus. Coupe Club Sedan Tour. Sedan	1421 1306 1341	3315 3440 3460	Streamliner Six Sedan Coupe Sedan, 6w., 4d. Station Wagon Sed. Cpe., Chief Sedan, 4d., Chief Station Wagon	1060 1118 1360 1112 1170 1412	3355 3415
Super-Equip. 40B Sedan, 4d Fam. Sedanet	1297 1224	3785 3725	Windsor 6 Coupe Club Coupe Conv. Coupe Brougham, 2d. Sedan, 4d. Town Sedan Sedan, 8p. T. & C. Wagon, 6p. T. & C. Wagon, 9p. Limousine	1140 1228 1420 1220 1255 1295 1605 1595 1685	3375 3450 3685 3465 3520 3530 3640 3725	Super DeL. Six Coupe, 3p. Tudor Sedan Sedan Coupe Fordor Sedan Station Wagon Special V8 Coupe, 3p. Tudor Sedan Fordor Sedan	850 885 910 920 1080 1115 790 825 860	2958 3122 3045 3141	MERCURY Coupe, 3p. Sedan, 2d. Sedan Coupe Town Sedan Club Conv. Station Wagon	995 1030 1055 1065 1215 1260	3073 3228 3263 3288 3528	Clipper Cust. 8-2011 Club Sedan Tour. Sedan Model 2021 Conv. Coupe Super Eight-160 Clipper-2003 Club Sedan Tour. Sedan	1361 1396 1531 1678 1739	3565 3585	Torpedo Eight Bus. Coupe Sport Coupe Sedan Coupe Sedan, 2d. Sedan, 4d., 6w. Sedan, 4d., 4w. Conv. Sed. Cpe.	993 1035 1051 1041 1088 1088 1277	3430 3320
Century 60 Sedan, 4d. Sedanet, 2d.	1465 1413	4065 3985	Saratoga 8 Coupe Club Coupe Brougham, 2d. Sedan, 4d. Town Sedan	1325 1380 1365 1405 1450	3820 3900	De Luxe V8 Coupe, 3p. Tudor Sedan Sedan Coupe Fordor Sedan	815 850 875 885	2978 3141 3065 3161	NASH Ambassador 600 Sedan, trk., 4d. Bus. Coupe Brougham, 2d. Sedan, fl., 4d. Sedan, Slps., 2d.	993 918 958 968 948	2655 2540 2580 2650 2605	Model 2023 Conv. Coupe Model 2004 Tour. Sedan Model 2005 Tour. Limousine Tour. Sedan	1842 2231 2103	3905 4445 4325	STUDEBAKER Champion Custom Coupe, 3p. Coupe, 5p. Club Sedan Cruis. Sedan	810 835 840 870 880	2415 2455 2495 2520 2520
Roadmaster 70 Sedan, 4d. Conv. Coupe Sedanet, 2d.	1601 1822 1528	4150	New Yorker 8 Coupe Club Coupe Conv. Coupe Brougham, 2d. Sedan, 4d. Town Sedan	1385 1450 1640 1440 1475 1520	3760 3815 4065 3905 3925	Sup. De Luxe V8 Coupe, 3p. Tudor Sedan Sedan Coupe Fordor Sedan Conv. Coupe Station Wagon	860 895 920 930 1090 1125	3050 3159 3120 3200 3468	Ambassador 6 Sedan, trk., 4d. Bus. Coupe Brougham, 2d. Sedan, fl., 4d. Sedan, Slps., 2d.	1159 1084 1124 1134 1114	3335 3200 3230 3335 3285	Model 2055 Bus. Limousine Bus. Sedan Cus. Sup. 8-180 Clipper 2006 Club Sedan Tour. Sedan	2077 1949 2169 2271	4435 4315 4010 4030	De Luxe Coupe, 3p. Coupe, 5p. Club Sedan Cruis. Sedan	845 870 875 905	2435 2470 2520 2545
CADILLAC Series 61 Club Coupe, 5p. Sedan, 4d.	1560 1647	4035 4115	Crown Imper. Sedan Sedan, 8p. Limousine	950 975 1035 1100 1050 1085 1105	3925	HUDSON Six Club Sedan, 2d. Sedan, 4d. Coupe, 3p. Club Coupe Util. Coach Util. Coupe	2895 2940 2795 2845 2905 2900	OLDSMOBILE Special Six-66 Bus. Coupe Club Coupe Club Sedan Sedan, 2d. Sedan, 4d. Town Sedan Conv. Coupe Station Wagon	992 1035 1050 1040 1088 1088 1277 1376	3230 3265 3270 3280 3315 3320	Model 2007 For. Sedan Tour. Sedan Cabriolet Model 2008 Tour. Limousine Tour. Sedan LeB. Limousine LeB. Sedan Town Car	3126 2527 4995	4390 4280 4075	De Luxe Sedan Coupe Cruis. Sedan Land Cruiser	1153 1173 1208	3210 3290 3305	
Series 62 Club Coupe, 5p. Club Coupe, 5p. Sedan, 4d. Sedan, 4d. Conv. Coupe, 5p.	1667 1754 1754 1835 2020		CROSLEY Conv. Coupe Conv. Cabriolet Pkw. Delivery Pickup Delivery Liberty Sedan Panel Delivery Station Wagon	1010 1092 1075 1103 1147 1455	3190 3270 3270 3315 3335	De Lux Six Club Sedan, 2d. Sedan, 4d. Coupe, 3p. Club Coupe Conv. Sedan	2935 2975 2845 2900 3140	Dynamic Six Club Sedan Club Sedan Sedan, 4d. Sedan, 4d. Sedan, 4d.	1095 1185 1153 1242	3395 3460 3465 3510	PLYMOUTH De Luxe Coupe Club Coupe Sedan, 2d. Sedan, 4d. Util. Sedan, 2d.	812 885 850 889 842	2930 2990 2985 3025 2930	President 8 Custom Sedan Coupe Cruis. Sedan Land Cruiser	1242 1262 1297	3440 3485 3510	
Series 63 Sedan, 4d.	1882	4115	DE SOTO De Luxe Bus. Coupe Coupe, 6p. Sedan, 2d. Sedan, 4d. Town Sedan Sedan, 7p.	1010 1092 1075 1103 1147 1455	3190 3270 3270 3315 3335	Super Six Club Sedan, 2d. Sedan, 4d. Coupe, 3p. Club Coupe Conv. Sedan	2935 2975 2845 2900 3140	Dynamic Six Club Sedan Club Sedan Sedan, 4d. Sedan, 4d. Sedan, 4d.	1095 1185 1153 1242	3395 3460 3465 3510	PLYMOUTH De Luxe Coupe Club Coupe Sedan, 2d. Sedan, 4d. Util. Sedan, 2d.	812 885 850 889 842	2930 2990 2985 3025 2930	President 8 Custom Sedan Coupe Cruis. Sedan Land Cruiser	1242 1262 1297	3440 3485 3510	
Series 64 Sedan, 5p. Sedan, div., 5p. Sedan, 7p. Imperial, 7p.	2896 3045 3045 3204		CUSTOM Coupe Club Coupe Conv. Coupe Brougham Sedan, 4d. Town Sedan Sedan, 7p. Limousine	1046 1142 1317 1142 1152 1196 1504 1580	3205 3270 3510 3305 3330 3365	Commodore Six Club Sedan, 2d. Sedan, 4d. Coupe, 3p. Club Coupe Conv. Sedan	3090 3145 2995 3090 3280	Dynamic Six Club Sedan Club Sedan Sedan, 4d. Sedan, 4d. Sedan, 4d.	1095 1185 1153 1242	3395 3460 3465 3510	PLYMOUTH De Luxe Coupe Club Coupe Sedan, 2d. Sedan, 4d. Util. Sedan, 2d.	812 885 850 889 842	2930 2990 2985 3025 2930	President 8 Custom Sedan Coupe Cruis. Sedan Land Cruiser	1242 1262 1297	3440 3485 3510	
Series 65 Sedan, 5p. Sedan, div., 5p. Sedan, 7p. Imperial, 7p.	3306 3459 3459 3613 4330 4484 3152 3306	4750 4810 4800 4860 4900 4915 4750 4810	DODGE De Luxe Coupe Club Coupe Conv. Coupe Brougham Sedan, 4d. Town Sedan Sedan, 7p. Limousine	895 995 958 998	3080 3155 3155 3195	Commodore 8 Club Sedan, 2d. Sedan, 4d. Coupe, 3p. Club Coupe Conv. Sedan	3280 3280 3130 3205 3400	Dynamic Eight Club Sedan Club Sedan Sedan, 4d. Sedan, 4d. Sedan, 4d.	1138 1225 1196 1284	3520 3570 3580 3640	PLYMOUTH De Luxe Coupe Club Coupe Sedan, 2d. Sedan, 4d. Util. Sedan, 2d.	812 885 850 889 842	2930 2990 2985 3025 2930	President 8 Custom Sedan Coupe Cruis. Sedan Land Cruiser	1242 1262 1297	3440 3485 3510	
Series 66 Sedan, 5p. Sedan, div., 5p. Sedan, 7p. Imperial, 7p.	3306 3459 3459 3613 4330 4484 3152 3306	4750 4810 4800 4860 4900 4915 4750 4810	DODGE De Luxe Coupe Club Coupe Conv. Coupe Brougham Sedan, 4d. Town Sedan Sedan, 7p. Limousine	895 995 958 998	3080 3155 3155 3195	Commodore 8 Club Sedan, 2d. Sedan, 4d. Coupe, 3p. Club Coupe Conv. Sedan	3280 3280 3130 3205 3400	Dynamic Eight Club Sedan Club Sedan Sedan, 4d. Sedan, 4d. Sedan, 4d.	1138 1225 1196 1284	3520 3570 3580 3640	PLYMOUTH De Luxe Coupe Club Coupe Sedan, 2d. Sedan, 4d. Util. Sedan, 2d.	812 885 850 889 842	2930 2990 2985 3025 2930	President 8 Custom Sedan Coupe Cruis. Sedan Land Cruiser	1242 1262 1297	3440 3485 3510	
Series 67 Sedan, 5p. Sedan, div., 5p. Sedan, 7p. Imperial, 7p.	3306 3459 3459 3613 4330 4484 3152 3306	4750 4810 4800 4860 4900 4915 4750 4810	DODGE De Luxe Coupe Club Coupe Conv. Coupe Brougham Sedan, 4d. Town Sedan Sedan, 7p. Limousine	895 995 958 998	3080 3155 3155 3195	Commodore 8 Club Sedan, 2d. Sedan, 4d. Coupe, 3p. Club Coupe Conv. Sedan	3280 3280 3130 3205 3400	Dynamic Eight Club Sedan Club Sedan Sedan, 4d. Sedan, 4d. Sedan, 4d.	1138 1225 1196 1284	3520 3570 3580 3640	PLYMOUTH De Luxe Coupe Club Coupe Sedan, 2d. Sedan, 4d. Util. Sedan, 2d.	812 885 850 889 842	2930 2990 2985 3025 2930	President 8 Custom Sedan Coupe Cruis. Sedan Land Cruiser	1242 1262 1297	3440 3485 3510	
Series 68 Sedan, 5p. Sedan, div., 5p. Sedan, 7p. Imperial, 7p.	3306 3459 3459 3613 4330 4484 3152 3306	4750 4810 4800 4860 4900 4915 4750 4810	DODGE De Luxe Coupe Club Coupe Conv. Coupe Brougham Sedan, 4d. Town Sedan Sedan, 7p. Limousine	895 995 958 998	3080 3155 3155 3195	Commodore 8 Club Sedan, 2d. Sedan, 4d. Coupe, 3p. Club Coupe Conv. Sedan	3280 3280 3130 3205 3400	Dynamic Eight Club Sedan Club Sedan Sedan, 4d. Sedan, 4d. Sedan, 4d.	1138 1225 1196 1284	3520 3570 3580 3640	PLYMOUTH De Luxe Coupe Club Coupe Sedan, 2d. Sedan, 4d. Util. Sedan, 2d.	812 885 850 889 842	2930 2990 2985 3025 2930	President 8 Custom Sedan Coupe Cruis. Sedan Land Cruiser	1242 1262 1297	3440 3485 3510	
Series 69 Sedan, 5p. Sedan, div., 5p. Sedan, 7p. Imperial, 7p.	3306 3459 3459 3613 4330 4484 3152 3306	4750 4810 4800 4860 4900 4915 4750 4810	DODGE De Luxe Coupe Club Coupe Conv. Coupe Brougham Sedan, 4d. Town Sedan Sedan, 7p. Limousine	895 995 958 998	3080 3155 3155 3195	Commodore 8 Club Sedan, 2d. Sedan, 4d. Coupe, 3p. Club Coupe Conv. Sedan	3280 3280 3130 3205 3400	Dynamic Eight Club Sedan Club Sedan Sedan, 4d. Sedan, 4d. Sedan, 4d.	1138 1225 1196 1284	3520 3570 3580 3640	PLYMOUTH De Luxe Coupe Club Coupe Sedan, 2d. Sedan, 4d. Util. Sedan, 2d.	812 885 850 889 842	2930 2990 2985 3025 2930	President 8 Custom Sedan Coupe Cruis. Sedan Land Cruiser	1242 1262 1297	3440 3485 3510	
Series 70 Sedan, 5p. Sedan, div., 5p. Sedan, 7p. Imperial, 7p.	3306 3459 3459 3613 4330 4484 3152 3306	4750 4810 4800 4860 4900 4915 4750 4810	DODGE De Luxe Coupe Club Coupe Conv. Coupe Brougham Sedan, 4d. Town Sedan Sedan, 7p. Limousine	895 995 958 998	3080 3155 3155 3195	Commodore 8 Club Sedan, 2d. Sedan, 4d. Coupe, 3p. Club Coupe Conv. Sedan	3280 3280 3130 3205 3400	Dynamic Eight Club Sedan Club Sedan Sedan, 4d. Sedan, 4d. Sedan, 4d.	1138 1225 1196 1284	3520 3570 3580 3640	PLYMOUTH De Luxe Coupe Club Coupe Sedan, 2d. Sedan, 4d. Util. Sedan, 2d.	812 885 850 889 842	2930 2990 2985 3025 2930	President 8 Custom Sedan Coupe Cruis. Sedan Land Cruiser	1242 1262 1297	3440 3485 3510	
Series 71 Sedan, 5p. Sedan, div., 5p. Sedan, 7p. Imperial, 7p.	3306 3459 3459 3613 4330 4484 3152 3306	4750 4810 4800 4860 4900 4915 4750 4810	DODGE De Luxe Coupe Club Coupe Conv. Coupe Brougham Sedan, 4d. Town Sedan Sedan, 7p. Limousine	895 995 958 998	3080 3155 3155 3195	Commodore 8 Club Sedan, 2d. Sedan, 4d. Coupe, 3p. Club Coupe Conv. Sedan	3280 3280 3130 3205 3400	Dynamic Eight Club Sedan Club Sedan Sedan, 4d. Sedan, 4d. Sedan, 4d.	1138 1225 1196 1284	3520 3570 3580 3640	PLYMOUTH De Luxe Coupe Club Coupe Sedan, 2d. Sedan, 4d. Util. Sedan, 2d.	812 885 850 889 842	2930 2990 2985 3025 2930	President 8 Custom Sedan Coupe Cruis. Sedan Land Cruiser	1242 1262 1297	3440 3485 3510	
Series 72 Sedan, 5p. Sedan, div., 5p. Sedan, 7p. Imperial, 7p.	3306 3459 3459 3613 4330 4484 3152 3306	4750 4810 4800 4860 4900 4915 4750 4810	DODGE De Luxe Coupe Club Coupe Conv. Coupe Brougham Sedan, 4d. Town Sedan Sedan, 7p. Limousine	895 995 958 998	3080 3155 3155 3195	Commodore 8 Club Sedan, 2d. Sedan, 4d. Coupe, 3p. Club Coupe Conv. Sedan	3280 3280 3130 3205 3400	Dynamic Eight Club Sedan Club Sedan Sedan, 4d. Sedan, 4d. Sedan, 4d.	1138 1225 1196 1284	3520 3570 3580 3640	PLYMOUTH De Luxe Coupe Club Coupe Sedan, 2d. Sedan, 4d. Util. Sedan, 2d.	812 885 850 889 842	2930 2990 2985 3025 2930	President 8 Custom Sedan Coupe Cruis. Sedan Land Cruiser	1242 1262 1297	3440 3485 3510	
Series 73 Sedan, 5p. Sedan, div., 5p. Sedan, 7p. Imperial, 7p.	3306 3459 3459 3613 4330 4484 3152 3306	4750 4810 4800 4860 4900 4915 4750 4810	DODGE De Luxe Coupe Club Coupe Conv. Coupe Brougham Sedan, 4d. Town Sedan Sedan, 7p. Limousine	895 995 958 998	3080 3155 3155 3195	Commodore 8 Club Sedan, 2d. Sedan, 4d. Coupe, 3p. Club Coupe Conv. Sedan	3280 3280 3130 3205 3400	Dynamic Eight Club Sedan Club Sedan Sedan, 4d. Sedan, 4d. Sedan, 4d.	1138 1225 1196 1284	3520 3570 3580 3640	PLYMOUTH De Luxe Coupe Club Coupe Sedan, 2d. Sedan, 4d. Util. Sedan, 2d.	812 885 					

Gasoline 'Deodorized'

by New Solvent Process

A revolutionary gasoline refining process has been developed by research engineers of The Atlantic Refining Co. and is to be licensed for use by other refiners, according to an announcement made by Robert H. Colley, president.

The new process enables refiners to produce better motor fuels by removing substances which give raw gasoline its obnoxious odor. This "purification" of the raw motor fuel at the same time makes it more susceptible to treatment with tetraethyl lead to increase its anti-knock value for use in modern high-compression automobile engines.

The story of the development of the new Atlantic process runs back more than 10 years. Since its beginning, the petroleum industry has been plagued by the fact that gasoline contains a small quantity of very objectionable sulphur compounds known to the chemist as mercaptans. These same mercaptans make the skunk such an exclusive and disliked member of modern society.

For many years the industry converted these mercaptans to compounds which are odorless, but remain in the gasoline. This was called "sweetening". The process served its purpose admirably, if expensively, until refiners started to use ethyl fluid. Then it began to be recognized that these mercaptans, as well as the odorless sulphur compounds into which the mercaptans were converted, were equally deleterious as "poisons" or neutralizers of the effectiveness of ethyl fluid when it was added to gasoline. As a result research men have been working for years to develop a process which would remove these substances and permit the use of modern gasoline more efficiently.

The solvent consists of a mixture of water, caustic soda—the white crystals used to clean plugged drain pipes—and methanol, an alcohol widely used as an anti-freeze in automobile radiators.

Wage and Hour Division to Inspect Jobbers

All automobile parts and accessories distributing establishments will be inspected during January to learn whether they are complying with the Fair Labor Standards Act, it is announced by the Wage and Hour Division of the Department of Labor.

The division, it is announced, will not regard any selling establishment as a retail outlet unless at least 75 per cent of its sales during the period beginning July 1 this year was of a retail nature. Where it is found that wholesale, commercial, and industrial sales amount to more than 25 per cent of the firm's total dollar volume, the employees engaged in such transac-

tions fall under the provisions of the wage-hour law. These require a minimum of 30 cents an hour and at least time and one-half for overtime for hours worked in excess of 40 hours a week.

Brake Lining Makers

Out of 1942 ASI Show

Disapproving of an ASI Show in February the Brake Lining Manufacturers' Association, Inc., recently adopted the following resolution:


"WHEREAS the members of the Brake Lining Manufacturers' Asso-

ciation, Inc., who assembled at its annual meeting on Sept. 24, 1941, believe that it is inconsistent with present conditions and the National Defense effort to exhibit at the Automotive Service Industries Show scheduled to be held in February, 1942, it was moved, seconded and unanimously

"RESOLVED: That the membership of the Brake Lining Manufacturers' Association, Inc., assembled at its annual meeting, hereby record their decision not to exhibit their respective products at the ASI Show scheduled for February, 1942."

Exclusive!

"THESE KITS SURE STRETCH
SALES AND DO THE JOB BETTER!"



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THE 3 MOST VITAL PARTS
IN THE CONTROL OF OIL IN
1 PACKAGE... 1 JOB NUMBER
...LOWER PRICES**

- 1** Altinized *Engineered* Piston Ring Sets
- 2** Special Undersize, Triple Altinized Con Rod Bearings
- 3** Engineered Piston Expanders

"LET'S JOIN HANDS AGAINST WASTE!"

LEGALLY SPEAKING

A lawyer's interpretation of Federal and local court decisions of interest to repairmen, presented each month

By C. R. ROSENBERG, JR.

Personal Service Contract

Where a man is hired by the week or by the month or any other fixed period to perform personal services, ordinarily he cannot be "fired" until the expiration of the period for which he was engaged, unless he breaches the contract in some way himself.

But sometimes personal service contracts specify no fixed time during which they are to be in effect. Thus a repairman may be told to "service our trucks as needed." Many contracts are said to be void when they fail to name a definite time during which the contract is to run, but in a recent California case the court said that this is not true of personal service contracts "of a continuing nature."

"In this case," said the court, "the contract was not void for failure to specify the time during which the employment was to continue. It was for personal services which were continuing in their nature. Such contracts may be terminated by either party at will upon giving the adverse party reasonable notice thereof. When a contract for continuing services is terminated after they have been rendered pursuant thereto, the employer is nevertheless liable for the services already performed." (*Mile vs. California*, 114 *Pacific Reporter*, second series, 651).

An oral contract of the kind is valid and enforceable, but the repairman may have trouble in proving the exact terms of a word-of-mouth contract. But note: A contract which, by its terms, cannot be performed within one year cannot be collected on unless it is in writing!

Must Owner Pay?

A chauffeur or a member of the car owner's family brings a car to the repairman and orders certain work done and parts replaced. After the job is finished, the owner refuses to pay and says that the chauffeur or the member of the family was not authorized by him to have the work done?

Can the car owner be forced to pay?

He can, if the chauffeur or the member of the family was actually his agent in the transaction.

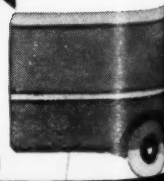
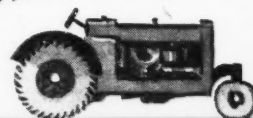
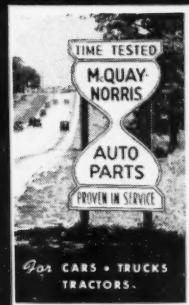
"A principal is bound by the act of his recognized agent," said a Kentucky court recently, "when it is within the scope of the agent's apparent authority. Thus if the principal has held out that an agent is authorized to handle certain transactions for him, he is bound by transactions which are fairly and reasonably with the class specifically authorized."

A car owner might have said, for example, that his chauffeur or a cer-



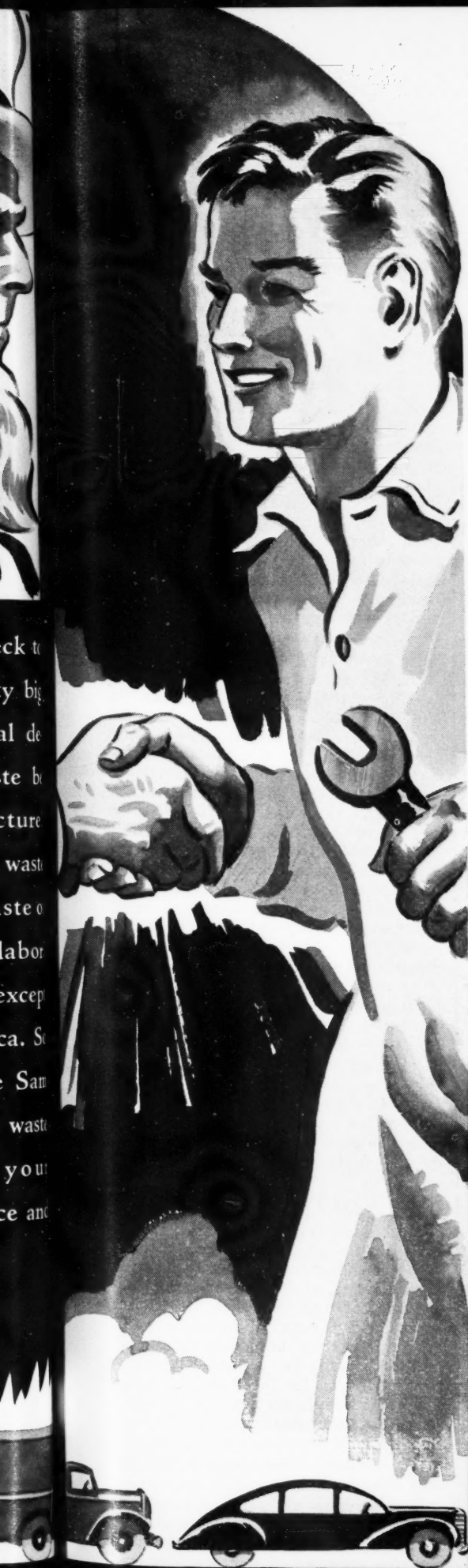
Waste is a pain in the neck to Uncle Sam and a mighty big pain right now. National defense demands that waste be knocked out of the picture. Bungled repair jobs mean waste . . . waste of time . . . waste of material . . . waste of labor. Waste benefits no one except those opposed to America. So join hands with Uncle Sam

and kick waste out of your shop once and for all!



McQUAY-NORRIS

Let's



tain member of his family has the job of seeing that the car is kept in repair. Or he might have approved and paid for previous repair jobs ordered by the chauffeur or by the same member of the family. Such precedent would justify the repairman in concluding that the chauffeur or the member of the family has authority to have repair jobs done at the owner's expense.

Once it is shown that the person who ordered the job had authority to keep the car in repair, it makes no difference that the particular job was contrary to the car owner's wishes.

"It matters not," says the same Kentucky court, "that the agent acts contrary to the instructions of his principal where a third person with whom he deals is ignorant of his circumscribed authority or has no reason to believe that he is exceeding it or violating the instructions of his principal."

Where a repairman is getting a job through a chauffeur or a member of the family for the first time, he will do well to get a personal O.K. by the car owner. Some repairmen do this by requesting an approval of the estimate or at least of the list of items included in the job. (*American vs. Brandeis*, 151 *Southwestern Reporter*, second series, 445).

Consideration in Contract

When a repairman is asked to sign a contract which does not mention a "consideration," he is being lured into a transaction that cannot be enforced. No contract is valid without a "consideration."

"The most widely used definition of the term 'consideration' is a benefit to the party promising or a loss or

detriment to the party to whom the promise is made," said an Iowa court recently.

Thus, in an ordinary repair job, the labor and material constitute the consideration which the customer receives, and the money paid for the work is the consideration going to the repairman.

But even a contract to do the job must have a consideration. Thus, the repairman's promise to do the job is the consideration on his part, and the promise to pay for it when completed is the consideration on the customer's part.

If there's no consideration, there's no contract. (*Wright vs. Iowa*, 298 *Northwestern Reporter*, 790).

Driveway Trouble

Where neighbors or members of the general public use a repairman's driveway as a short-cut or convenience, without his permission, the repairman may some day find that he cannot stop such unauthorized use of his drive. Those who have been using his driveway without his permission may acquire "an easement by prescription" to keep on doing it forever. If that happens, he cannot build over the driveway or do anything to prevent their use of it.

Such unpermitted use must, in the legal phrase, be "open, notorious, continuous and adverse to the interest and rights of the true owner." "Open and notorious" simply means that the use of the driveway by others is visible so that the repairman cannot help knowing about it. "Adverse to his interest and rights" implies that the unpermitted use violates his right to the exclusive use and control of his own property. "Continuous" means

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McQUAY-NORRIS MANUFACTURING CO.
Let keep cars, trucks and tractors rolling!

CUSTOMERS IN KHAKI

(Continued from page 25)

"I'm going to trade it in next month."

Usually he is not only unable to buy a new car but not quite up to buying all the service needed by the old one, and the serviceman who gives him an estimate on repairs is wasting his time. Their finances depleted by this or that, many of the boys try to make their own repairs, and this leads, if the serviceman lets it, to nickel and dime repairs, requests for the loan of tools, and repairing the damage done by the soldiers' repairs.

One shop has had several requests to drain crankcase oil just as a favor. The boys were financially embarrassed at the moment, partly from having just bought new oil from a chain store. Others need a screwdriver for a few minutes so they can install a horn they have picked up at a junk yard. A draftee in need of front-end work brought in spindle bushings to be reamed out so he could install them himself.

Sometimes the soldiers' repairs

work and sometimes they don't. One lad put in a generator he had picked up somewhere, but the battery would not charge, so he was forced to go to a shop. The shop found, of course, that the soldier had hooked up the field coils wrong. Another lad came in to complain that he had just installed new valves and still could not get any power out of his jallopy. When the head had been removed and he had been shown the burned valves, he confessed he had simply taken out the old valves and put in new ones without cutting new seats.

Probably the saddest case is that of the draftee who was confined to a sick bed and lent his Model A Ford to a buddy, who promptly tried to go through a trailer instead of around it. The buddy did not have money enough for towing, and left the car along the road. Before the owner could get a shop to bring it in, somebody helped himself to two tires, the battery, the headlight bulbs, radiator cap, and sundry odds and ends.

As soon as he recovered, the owner went around to the shop and asked to have the car repaired. What with ironing out the accordion pleats in the body, and unbending the frame and front axle, replacing glass and the missing parts, the estimate amounted to about four months' Army pay. The draftee offered next month's pay—come three weeks next Friday—but did not get the offer accepted. He promised to get the money somewhere but, after two months, his search still goes on. And the car, or what is left of it, still stands outside the shop, waiting for Fortune, possibly in the guise of ivory cubes, to smile on the dismounted and disconsolate soldier.

All in all, it is considerable of a business, this servicing private cars for the men in our new Army. One shop says its volume is up more than 40 per cent over the period just before the camp opened. Another, which used to employ only the owner and a helper, now has two mechanics and as many helpers. These are shops that do not let small things upset them.


Plastics on Program

Mechanical applications of rubber and plastics are among the subjects of outstanding importance to be discussed at the forthcoming annual meeting of the A.S.M.E. at Hotel Astor, New York. Because of the current scarcity of many types of materials and the probable greater restrictions to be faced in the near future, the information to be presented at the Rubber and Plastics Subdivision's sessions should be of great interest. These sessions will be held Dec. 4.

Nonmembers as well as members of the A.S.M.E. are invited to attend the sessions. The nominal registration fee required of nonmembers entitles them to attend the meetings of all divisions of the society.

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Factory Type Set
**PISTON RINGS ARE MADE OF
ELECTALLOY AND ALTIMIZED**

*"...and man,
what a difference
that makes!"*



**MADE TO OUTPERFORM
PRICED TO OUTSELL**



"The gage says half. I don't know if it means half full or half empty."

STARTERS

(Continued from page 37)

and the same on the other side. Since the two live brushes and the two grounded brushes are opposite each other, it means that opposite sides of the armature work under, or should work under, the same potential. In practice, this doesn't always happen and burning of spots on the commutator may result.

"It is easy to test a starter armature and discover any faults it may have. First, there is the ground test, made with test points, to discover if there is a ground, or leak, between the winding and the core and shaft. For this test, 110-volt current is ample, since it is 18 times stronger than a six-volt starter armature will ever have to withstand in normal use.

"Armatures that leak on the 110-volt test may still have a long life on six volts. Therefore, make the 110-volt test first, and, if a leak is shown, try the test again on six, 12 and 18 volts. If the leak doesn't reappear on these voltages, then it is possible to keep the armature in service for at least a while longer, but, if possible, try to sell a new armature because it is the safest thing to do. On the other hand, an armature that doesn't show a ground on 110 volts is okay from that angle.

"The next step is to test the armature for short circuits on the growler and a two-coil growler is preferred by many mechanics because it gives too few turns to build up a current on a stronger field. The next thing is to examine the commutator surface and the risers—where the coils are soldered to the bars. Two or three bars that are badly burned in several places on the commutator usually mean one of two things: either the field is out of balance—stronger on one side than the other—or there is an open circuit or bad connection between one or more of the coils and the commutator. The first condition can be handled by

installing a jumper between the two live brushes, which equalizes the current flowing into the two sides of the commutator. The second fault can be located by looking for loose or unsoldered connections to the armature coils.

"I've found a lot of these open circuits are caused by some over-ambitious man running a lathe tool too close to the riser when turning the commutator. The shine of fresh copper on the riser makes a nice-looking job, but don't do it. Even if you attempt a fine cut, you're likely to knock a few coil ends loose and trouble will result. When you find loose coil ends,

there's only one answer—do a good job of resoldering and use nothing but a rosin flux. In chronic cases of commutator bar burning, you can give a customer a lot more mileage between starter overhauls by undercutting the commutator the same as we do on generator armatures.

"I don't have to tell you boys in the shop that every few days we get an armature in which one or more of the coil sides are slung out of the core slots. This is nearly always caused by a defective starter clutch, which locks and gives the armature a hell of a fast spin when the motor

(Continued on page 62)

Johnson Slip-in Bearings for

Greater Performance



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Write for
FREE
Catalogue
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• The same high quality materials . . . the same exacting and precise treatment, required in the production of original equipment, goes into the Johnson line of replacement bearings. That is why they are so easy to install and why they deliver such exceptional performance. There are no second or third grades of Johnson merchandise. Try a set on your next job. There's a stock at your local dealers — for all types of cars.



JOHNSON BRONZE

Sleeve BEARING HEADQUARTERS

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SHOP KINKS



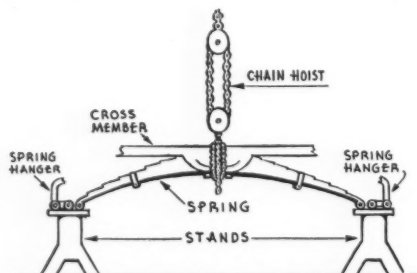
Here's your chance to pick up a little cigaret money. We'll pay three bucks (\$3.00) for every Shop Kink accepted and printed. So send 'em in to us—some short cut you use in doing a job easier and quicker than the other fellow—some special tool you made when you couldn't buy one to do the job—and we'll do the rest.

Here are some that were accepted this month:

REPLACING FRONT SPRING

Here's the way I replace the front spring in a Ford car:

Lift the front end of the car with a chain hoist, and place stands under each frame side rail. Then place a stand under each spring eye. Let the car down until the spring eyes rest on the stands. Remove the spring eye bolts and the center U bolts; then



raise the car again with the chain hoist and the spring can be removed.

Place the new spring in position in the frame cross member, resting on the stands at each spring eye. Lower the car. The weight will spread the spring so the eye bolts can be installed, and the center U bolts tightened. *Arthur Zeis, Florence, Ky.*

REMOVING LIGHT SWITCH

When the contacts in the headlight switch as used on recent model Chevrolet cars and trucks become dirty, it is necessary to remove the switch either to clean the contacts or to install a new switch. This is a mean job, because the nut which holds the



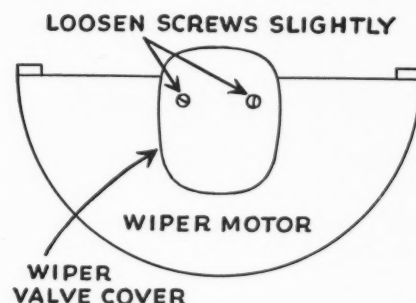
switch in place is so close to the dash it is hard to get wrench on it.

I have made a wrench which does the job easily. I took a 9/16 in. tap-wrench, bent the jaw up at a right angle to the shank, and cut the shank off to make it 4 in. long. Then I welded a bar across the end of the shank to make a "T" handle. This wrench gets up behind the switch and makes it easy to release the retaining nut. *J. T. Johnson, Box 251, Alpine, Texas.*

WINDSHIELD WIPER SERVICE

When you get a complaint of sluggish windshield-wiper action on a 1940 Plymouth or DeSoto, before you go to the trouble of removing the wiper body, loosen the two screws which hold the trip valve cover to the wiper body. I have found a number of cases in which simply loosening these screws corrected the trouble, and

it saved the time that would normally be required to remove and reinstall the wiper motor. If these screws are too tight, they force the cover inward, causing it to bind on the trip valve. *Peter Krawchuk, 25 Providence St., West Warwick, R. I.*



WHERE'S THE WRENCH?

Did you ever notice that, when you want a special wrench, you never can find it? This is particularly true of the wrench required to change the tips on a welding torch. We used to tie it to the welding truck with a piece of string, but the string would break just at a time when you didn't have time to get another, so eventually the wrench was lost.

I welded a piece of an open-end wrench to the welding truck, and it's always there when you want it. Simply place the tip in the wrench opening and give the torch a slight twist. It's easy and quick, and there is no lost time looking for the wrench. *Waino O. Mackey, Chester, Vt.*

WELDING HINT

When you have to weld cracks around a hole and want to save yourself the job of having to drill the hole out afterward, try this idea: Remove the center carbon stick from an old dry-cell battery. Grind it down to the size needed to plug the hole. Insert it in the hole, and proceed with the welding job. The carbon stick will keep the hole clean so that it will not



be necessary to drill it out after the job is finished. Of course, the welding material will not stick to the carbon. *Emil J. Novak, 2215 So. 13th St., Omaha, Neb.*



"We've made money every year for 31 years as a Studebaker dealer"

"It is mighty comforting to know that you have a company behind you that's as strong, experienced and foresighted as The Studebaker Corporation," writes H. B. Swedlund, Studebaker dealer in Sterling, Colorado.

"In my thirty-one years as a Studebaker dealer, I have made money every year. And I attribute my success to the consistent quality of Studebaker cars and the inspiring encouragement and friendly, common-sense helpfulness of Studebaker's executives and representatives.

"My efforts have certainly been worth while because I've got a profitable business now that my son can step into and operate successfully. And believe me, the Studebaker reputation for fair deal-

ing has been a real asset in this community.

"There have been some great Studebaker models in former years but you've never produced the equal of the new 1942 Studebakers. They are competitive-plus. And the well-founded plans you've given us for moving them at a profit—and for building up extra

service and parts business to offset restricted production—certainly are proving effective beyond any expectations."

★ ★ ★ ★

Studebaker Dealer Swedlund is an "old timer" with us, but his views express the feelings of hundreds of dealers who have enjoyed ten or more years of association with "America's Friendliest Factory". Studebaker is irrevocably pledged to continue and expand its cooperative programs in the interest of dealer success. And the defense-time merchandising plans that so many Studebaker dealers are profitably employing are so flexible that even unforeseen situations can be met promptly. When the post-emergency period brings changed conditions, you can depend upon it that Studebaker will be ready for them with new programs that will make money for you.

FOR AMERICA'S DEFENSE

Studebaker is building an unlimited quantity of airplane engines, military trucks and other matériel.



FOR AMERICA'S TRANSPORTATION

Studebaker is building a limited number of passenger cars.

STUDEBAKER

THE GREAT INDEPENDENT

STARTERS

(Continued from page 59)

starts. Let me warn you: never install a new armature where this has happened without also installing a new starter clutch. If you do, the same trouble is bound to happen again sooner or later."

"Isn't there any way that these slung armatures can be repaired?" Archie Roe wanted to know.

"There is," Sam came back, "if only one, two or maybe three slots are involved. I've repaired dozens myself

but I wouldn't recommend it if a new armature can be obtained at a reasonable price. A new half coil can be spliced into the circuit and insulated so it will stay put if you use care, but all this takes time and costs money.

"Now about the starter fields," Sam went on. "All starter fields have four poles, but in some jobs only two of them are wound and the other two pole shoes are left bare. A starter field coil is made on one long ribbon of copper wound around in six or eight turns and the two ends brought out. A strip of fiber paper is wound along with the copper ribbon to provide insulation between turns. Then the



"All I know is that she was left in the car when it was traded in."

HYPRESSURE JENNY

STEAM CLEANER

Makes you money three ways!

The *extra* income you want can come only through better profits on present business, or from brand new cash sources. Here are 3 ways to ring up added dollars with HYPRESSURE JENNY:

1. Sell motor and chassis cleaning jobs with washes and lubes. A "like new" engine cleaning brings \$1.50 to \$3.00—takes only 10 to 15 minutes. Owners buy readily—they know their cars may have to last a long time, now!
2. Get \$15 to \$50 more for used cars (an established fact!) by spic-and-span JENNY cleaning before showing. Moves 'em faster, too!
3. Earn up to 40¢ more out of each repair pair dollar! JENNY cleaning before repairs saves 15 to 25 minutes of mechanic's time usually lost fighting dirt and grease. Statistics prove it!

Investigate! Fill in the coupon for a *fact* survey now.

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SURVEY

whole thing is bound with cotton tape, doped and baked. The outer insulation should be able to withstand 110 volts on a ground test, and, if it won't, you'd better reinsulate the coils or replace them. Be sure you have a good, tight solder job where the coils join the terminal, no grounds, and you won't have to bother much more as far as the field is concerned.

"I shouldn't have to say much about brushes because it is easy to see when they are worn short and need replacing. However, it is important that you use the proper kind of brush. Now are there any questions any of you boys would like to ask?"

"How about reversing the rotation of a starting motor?" Red Roberts asked after a pause. "Several times people have asked me about reversing one to use for something else and I've always had to pass it up."

"That's easy," replied Sam. "All you have to do is put your live brushes where the grounded ones used to be, and put the grounded ones where the insulated ones were. That means that you'll have to shift the brush holding end plate around a quarter turn and drill new holes for the through bolts, or else you'll have to leave the end plate in the same position and insulate the brush holders that were formerly grounded and ground the two that were insulated originally. At the same time, you'll have to shift the field leads to fit the new positions. In order to reverse the rotation of a starter, you have to send the current through the armature in the opposite direction—and what I've just told you is the easiest way to do it. If you want to use a Bendix drive with the new rotation, you'll have to swap it for one that will work in the new rotation."

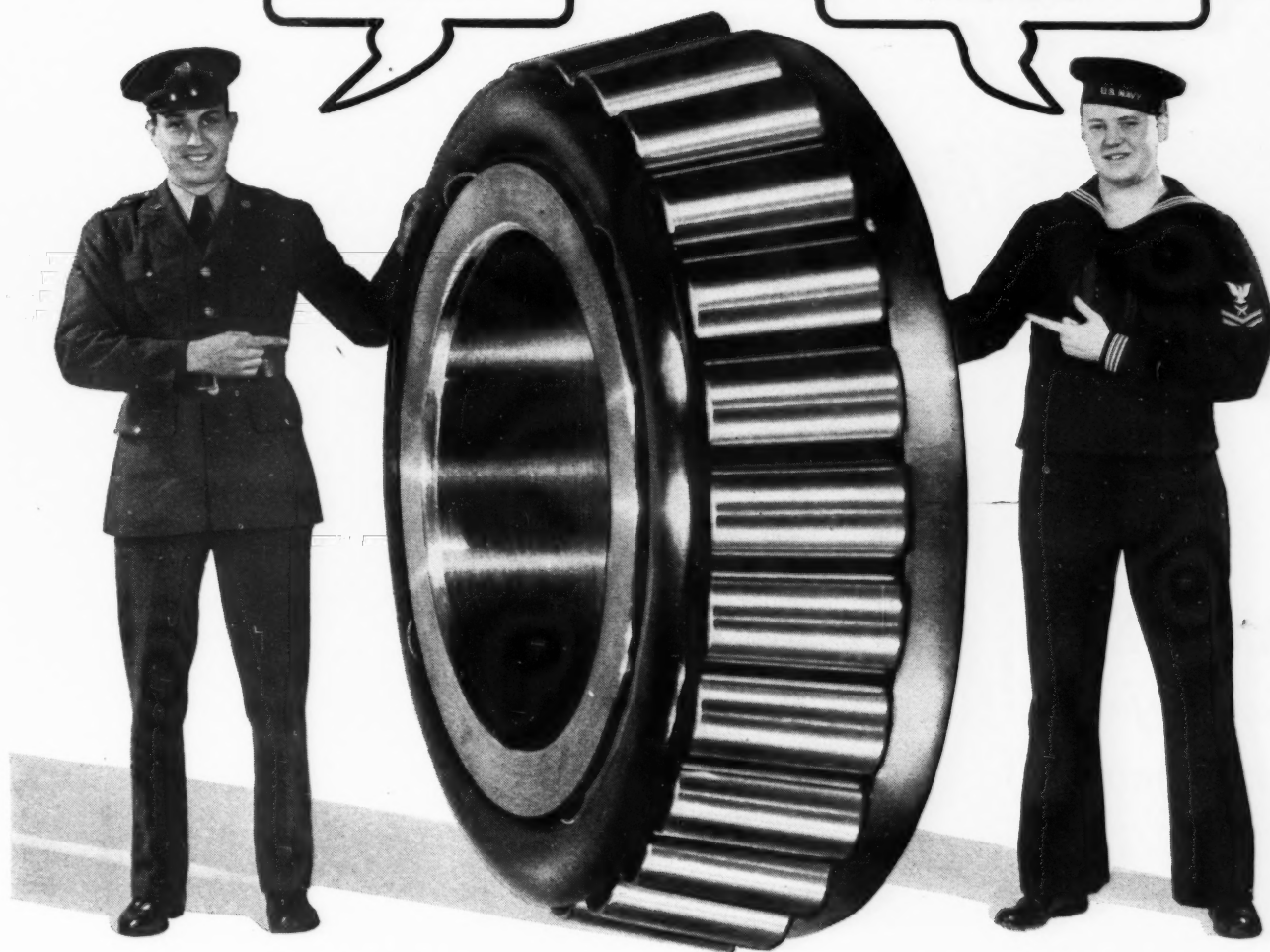
"In the last shop where I worked," one of the new men commented, "they tested starters by hooking them to a battery on the bench to see if they would spin. Even so, a lot of 'em wouldn't work right back on the car. Isn't there a better way of checking starters?"

(Continued on page 64)

Tyson SERVES 'EM BOTH

...IN THE
ARMY

...AND NAVY
GUNS



● On land and sea, Tyson Cageless Bearings have proved their absolute dependability in gun mounts and countless other heavy-duty defense applications.

In big automotive jobs—trucks, tractors, trailers—

Tyson likewise can be counted on to deliver the goods.

Tyson Cageless has more rolls—more capacity—greater rigidity. Most important of all, Tyson Cageless has longer life. It's a better bearing for bigger jobs.

Cageless FOR HARD SERVICE

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Tyson

TYSON ROLLER BEARING CORPORATION, MASSILLON, OHIO

STARTERS

(Continued from page 62)

"I should say there is!" Sam exclaimed. "A foot-pounds test is the only one that is reliable. First we clamp the starting motor firmly in the test bench, install the test arm that is exactly a foot long from the center where it clamps to the starter gear to the end, and rig up a scale that weighs in pounds. The end of the arm rests on the scale and registers the applied pressure. Then we throw on the switch, and while the starter is under stall torque we read

the ammeter and voltmeter and note the reading in pounds on the scale. Of course, we have the correct specifications as put out by the manufacturers for each model of starter, and the job has to measure up before we turn it loose on the customer.

"And just remember this," Sam concluded, "a starter is a hard-working unit and you can picture it in your mind as a one-ton truck trying to haul a ten-ton load. To do the whale of a job it has to do—and to do it well—it has to be right. Don't let a starter out of your hands until you're sure it is right and will give good service.

A customer may forgive you for turning out a leaky valve job or a motor with a skip in it, but he won't forgive you if he can't get the damn thing started. All right, gang, let's go and hunt up a bite of chow."

RESOLUTIONS

(Continued from page 22)

these activities, she is more helpful to a shop in dealing with woman customers. She has the woman's viewpoint.

Pick-up and delivery service is another way to make a hit with woman drivers. The woman's duties hold her closer to home than do those of a man. She appreciates a shop that will send for her car and return it when it has been serviced. Furthermore, she has become accustomed, through dealing with grocers and other retail merchants, to paying something extra for delivery service. The convenience, she believes, is worth it. That solves the serviceman's problem of adding to his expense with pick-up and delivery service.

All in all, it looks like a sensible and profitable resolution, this New Year's pledge to make a stronger bid for the feminine service market.

SUPER SERVICE

(Continued from page 31)

The fact that the shop now keeps five mechanics, two lubrication men and a car washer constantly employed is some indication of its growth. And it has grown because it has given the car owner complete, one-stop service. "You can't get all a customer's service work unless you're prepared to do all of it," says Howard Fischer. "Maybe we don't get all of every customer's business now, but we get enough. If we got any more, I don't know what we'd do with it."

Right at the moment, there is another important factor in super service the Fischer shop is discovering. That is speed. With the service business booming, delivery of parts is slower than it used to be. This is not because jobbers are not so willing as before, but because their machine shops are busier and they simply do not have certain items. To eliminate all possible delay, the Fischer shop is carrying a parts inventory about 25 per cent heavier than it was a year ago. The stock consists mostly of electrical parts, windshield wipers and parts, fuel pump parts, front-end bushings, oil filter elements and such equipment items as tires, batteries and mufflers.

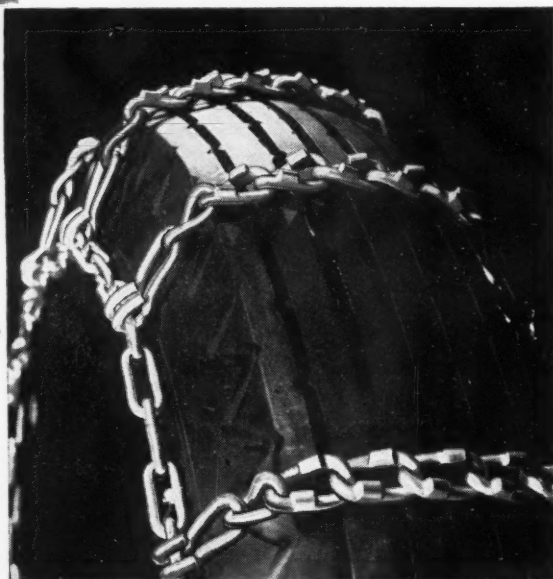
In other words, it is not enough for a shop to offer one-stop service. It must make that stop as brief as possible.

Here's the Answer to SAFETY... and MILEAGE ON TIRE CHAINS

CAMPBELL Lug-Reinforced Tire Chains

With many good products, quality is difficult to point out, but with Campbell Lug-Reinforced Tire Chains, the superiority is instantly apparent. Their unique construction tells at a glance that here at last is a scientific answer to the problem of all-way traction.

That's why Campbell Lug-Reinforced Tire Chains are so easy to sell. They are



the kind of chains that motorists have wanted. They not only give real protection under slippery winter conditions, but they give mileage that makes them really economical.

No Other Tire Chains Give You ALL These Advantages



1. ONE-PIECE CONSTRUCTION . . . Finest molybdenum steel. One piece. No welded bars to break off. Longer life.

2. POSITIVE ALL-WAY TRACTION . . . Exclusive, patented, saw-tooth design guarantees new high in traction under slipperiest conditions—ice, snow, etc.

3. LONG LIFE . . . Finest case-hardened alloy steel, positive traction, and one-piece construction give you mileage you never expected.

4. FULL PROFITS . . . Your profits on Campbell Lug-Reinforced Tire Chains are generous and fully protected. These chains are sold only through respected, carefully selected channels of distribution.

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Genuine

RING-TRUE BEARINGS

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Learn the complete facts about these amazing new bearings which eliminate danger of failure due to corrosion! Already they are used as standard equipment by leading manufacturers of Heavy Duty engines.

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Remember, ACID PROOF Aviation Type copper alloy bearings are *exclusive* with Ring-True!



ACID PROOF bearings have a dull, even-toned surface, as illustrated, in contrast to the mirror-like surface of babbitt lined bearings.



Complete Motor Bearing & Connecting Rod Service

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Factory Stocks in Principal Cities

ALWAYS REPLACE BEARINGS IN SETS

DRIVE MASTER

(Continued from page 19)

the brown-with-white-tracer wire is attached. Move the switch arm, and the clutch should remain released until there is approximately $\frac{1}{8}$ in. clearance between the lever and the stop, when it should start to engage. Next, reconnect the yellow wire to its terminal and remove the ground from the brown wire terminal. The clutch should release. When arm is moved for approximately one-half its total travel the clutch should start to en-

gage. If the clutch does not operate in this manner, replace the accelerator switch. If it does, adjust the throttle rod to be sure that the switch lever is firmly against the stop when the throttle is closed.

To check the Vacumotive Drive governor, first be sure that the red-with-white-tracer wire is properly connected, as shown in Illustration No. 4. When Vacumotive Drive only is used, the wire should be connected to the copper terminal of the governor; when the car is equipped with overdrive, the wire should be connected to the cadmium plated terminal. Then accelerate the engine to



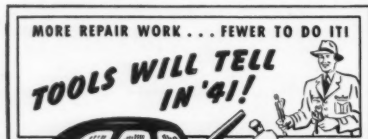
Get them on the road *Faster*



Now is the time to check up on your tool kit . . . to make sure it's "in shape" with plenty of Snap-ons for the big job ahead. For the greatest volume of repair business in automotive history is rolling in . . . and "tools will tell" as never before.

You'll find Snap-ons will *see you through*.

They're built to perform when the pressure's on. For instance: There's the positive, time-saving way a Snap-on wrench "snugs-on" to a nut, without slipping or chewing . . . the power you feel in a Snap-on's bulldog grip, in its safe, sure leverage . . . the nut-turning speed that comes from correctly shaped wrench handles for every job . . . the deft way a Snap-on handles . . . the beautiful balance and finish that tell you, even in the dark, that here's a master tool for master workmen!



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Snap-on SERVICE TOOLS
The Choice of Better Mechanics



"I told you to watch those guys across the street. They're tricky."

a speed of 30 m.p.h. in high gear, release the accelerator and rest the foot lightly on the clutch pedal. As the speed drops to approximately 19 m.p.h. you should feel the clutch release. If it does not, or if it starts to release at a higher speed, replace the governor switch.

Fails to Shift Into High

When accelerating in second gear, the transmission should shift into high at about 20 m.p.h. If it does not, it is an indication that the shift rail switch, Illustration No. 5, located at the left rear corner of the transmission, is not operating. The usual cause of this trouble is that the wire has become disconnected or that it has a poor connection either at the switch or at the accelerator switch (this is the yellow wire), or that the switch operating ball is sticking. Connect a test light between the wire and the switch terminal; the lamp should light in all positions except high gear. If the light does not go out when the transmission is shifted into high, free up the ball or replace the switch. To check for an open circuit, remove the wire from the Vacumotive Drive governor and connect a test light between the yellow wire and ground at the shift rail switch. The light should light if the circuit is good.

Gear "Hunting" in Neutral

A pulsating of the accelerator pedal, or a chugging noise, indicating that the transmission is trying to shift into a gear while the shift lever is in neutral, is a sign of improper adjustment of the neutral switch, Illustration 6, or a defective switch. To check the adjustment, back the lock nuts "A" away from the power lever about $\frac{1}{2}$ in., as shown. Shift the neutral switch pointer into the neutral position as indicated by the lines on the pointer and on the switch housing, and install a lock screw "B" to hold it in this position. With the transmission lever in neutral, unscrew

(Continued on page 68)



from HORSELESS CARRIAGE to FLYING FORTRESS

For 36 years, Raybestos has pioneered in the development of Brake Lining and Clutch Facings specially engineered to give top performance under the most exacting conditions of automotive and industrial use.

Today, under National Defense, Raybestos produces friction materials for America's armed forces. But the production of friction materials for America's transportation is also essential to Defense.

The replacement field is thus more vital than ever and Raybestos pledges to work with you more closely . . . to maintain production at utmost capacity and to speed delivery of Raybestos Quality Products.

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Brake Lining • Clutch Facings • Fan Belts • Hose For Cars, Trucks, Buses, Tractors.

Raybestos

AMERICA'S BIGGEST SELLING
BRAKE LINING



"YOUR 2 BEST FRIENDS for HIGHWAY SAFETY"

Safety Records Set By Perfect Circle Co.

The Perfect Circle Co. recently announced the standings of its plants in the National Safety Council Contest year ending June 30.

The Hagerstown, Ind., plant of the company completed the year without a lost-time accident, being credited with a total of 1,609,107 man-hours during the year. That is the second largest number of man-hours for any metal-working plant in the country which operated without a reportable injury.

Perfect Circle's Tipton, Ind., plant

completed its fourth consecutive year without a lost-time accident. Few plants in the country have been able to establish such a remarkable "no-accident" record.

These safety records are particularly unusual in view of the fact that Perfect Circle's peak sales, coupled with large defense contracts, have necessitated the addition of many inexperienced workers.

Borg-Warner Dividend

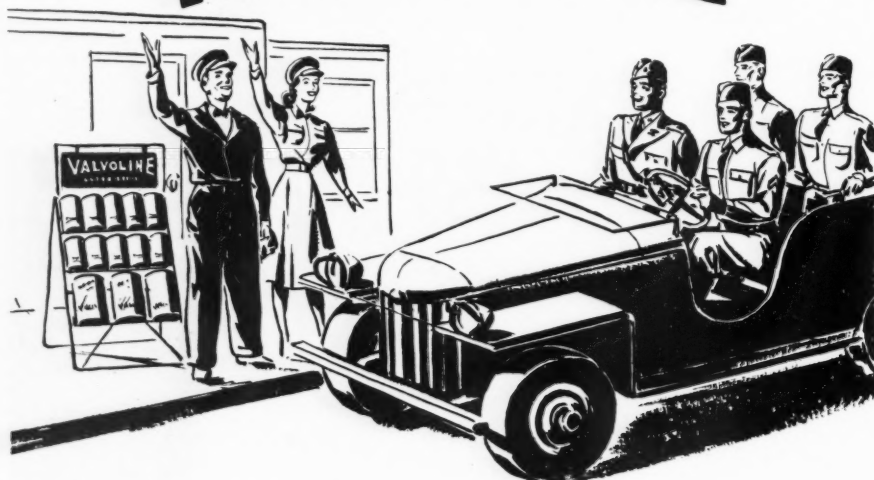
Estimated net income of the Borg-Warner Corp. and subsidiary companies for the quarter ended Sept.

30, 1941, subject to audit and year-end adjustments was \$2,343,385.98. This is equal to \$1 per share after provision for federal income, excess profits, and Canadian taxes for the third quarter of \$2,846,089.21. Estimated net income for the nine months ended Sept. 30, 1941, was \$6,350,930.48, being equal to \$2.718 per share after provision for federal income, excess profits, and Canadian taxes amounting to \$8,159,049.81.

The corporation directors declared a regular dividend of fifty cents per share and a special dividend of twenty cents per share on the common stock, both payable on Dec. 10, 1941, to stockholders of record at close of Nov. 25, 1941.

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VALVOLINE



You serve Uncle Sam, too, in your own way every time you sell Valvoline — the first Pennsylvania oil.

You are doing your part to protect America's Defense resources when you sell Valvoline and longer motor life.

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FIRST OF THE PENNSYLVANIA OILS



There is a red, white and blue twirler waiting for you—NOW. Sure winner!

Willys Awarded Order For 18,700,000 Shells

A contract for 18,700,000 40-mm. detonating fuses worth \$6,018,360 has spiraled defense orders of Willys-Overland Motors beyond the \$50,000,000 mark, it was announced here by Joseph W. Frazer, president of the Toledo company, who said government contracts now total \$54,655,500.

He also announced that full-scale production on Army orders for 18,600 light reconnaissance cars or "jeeps" is now under way, and within a short time, Frazer said he expected 400 units would be rolling off the assembly lines daily in the Toledo factory.

Completed Willys contracts, he said, include 1550 reconnaissance cars, valued at \$1,495,391 and 350 trailer coaches valued at \$278,320. Uncompleted contracts include \$13,940,410 in 155 mm. shells, \$1,947,962 in anti-aircraft breech housings and recoil cylinders, \$5,527,114 in powder and projectile hoists, \$520,000 in 20-mm. shells, in addition to contracts for additional manufacturing facilities totaling \$4,299,900 and miscellaneous orders, including forgings, gun carriages and "jeep" parts, totaling \$20,628,043.

DRIVE-MASTER

(Continued from page 66)

the transfer diaphragm rod lock nut, pull the rod backward to engage the transfer key in the power lever. Then tighten the lock nuts, lock the diaphragm rod lock nut and remove the set screw from the switch pointer of the neutral switch.

Slow Shifting

One of the things that might cause slow shifting is a pinched, collapsed or out-of-line condition at rubber connections or pipes, as shown in Illustration No. 7. The ends of the pipes should not be more than 1/2 in. apart at the rubber connections.



YOU'VE GOTTA
BE ABLE TO
"TAKE IT..."

BEFORE
YOU TRY TO
"DISH IT OUT"

".. AND THAT GOES FOR PLUGS AS WELL AS PUGS ! "

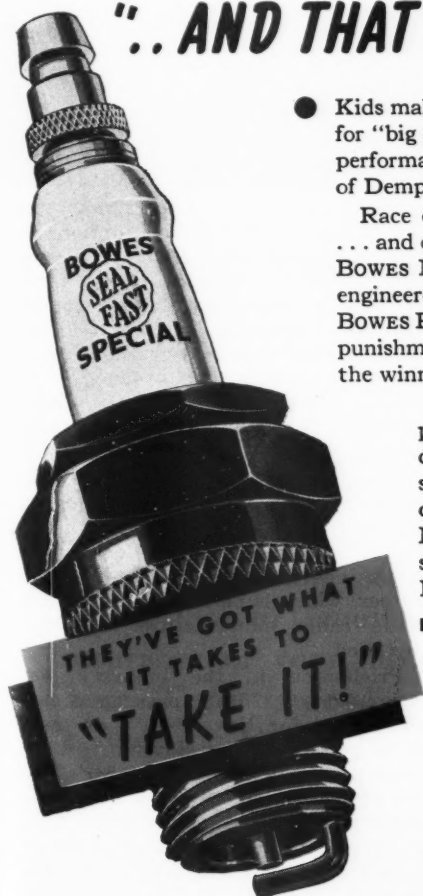
- Kids make good fighters . . . in their own class, but for "big time" give and take . . . for championship performance, we'd choose somebody on the order of Dempsey or Louis . . .

SAYS *Rex Mays*

Race drivers choose spark plugs the same way . . . and championship drivers like Rex Mays go for Bowes Plugs . . . the Plugs that are planned and engineered to deliver championship performance. Bowes Plugs keep on "dishing it out" under terrific punishment . . . and Bowes Plugs keep on sparking the winners home!

You want your customers to get the best performance for their spark plug money, don't you? And you want to make good, substantial spark plug profits from a non-chiseled line, don't you? All right, ask your Bowes Man to show you how you can make some *real* money for yourself with Bowes Plugs!

BOWES "SEAL FAST" CORPORATION • INDIANAPOLIS



BOWES



THE POWERFUL COMBINATION OF REX
MAYS AND BOWES PLUGS . . . WINNERS
OF THE AAA RACING CHAMPIONSHIP
FOR *2 Straight Years*

SPARK PLUGS

DETROIT LETTER

(Continued from page 43)

sion, the Electro-matic drive, now figures in 20 per cent of that company's sales. Studebaker also offers a semi-automatic transmission with a liquid coupling on its 1942 models, while Mercury and Lincoln will introduce a similar feature shortly.

The new "blackout" models without brightwork, which will be required by OPM after Jan. 1, will feature plastic and painted trim and molding in place of the present shining chrome and stainless steel which have marked

the passenger car field for several years. Body engineers have been experimenting with painted grilles in both harmonizing and contrasting colors. Painted steel strips and plastic molding also are being tried out, while several companies may use metallic appearing paint. Clear varnish, applied to a stamped steel grille and highly polished, is another possibility. The brightwork ban originally was due to go into effect Dec. 15 but several companies that had stocks already fabricated that would last beyond that date were permitted by OPM to use the brightwork until



Field executives of the NAPA at the Bridgeport, Pa., plant of the Continental-Diamond Fibre Co., following the five-day business meeting of the executives at Philadelphia. The executives shown are, left to right: Dewey Parks, Hooper Alexander and Ben Garvin, of Atlanta, and Jimmy Anderson of Birmingham.

HALLOWELL

WORK-BENCHES of STEEL



Fig. 732
Pat'd. and
Pat's. Pending.
Drawer is extra.

**MECHANICS prefer
their conveniences**

**SHOP OWNERS like
their long lasting
quality**

Having the features you want, "Hallowell" benches are modern and neat in appearance yet their rugged construction defies years of abuse.

Heavy flanged steel leg construction insures steadiness without costly bolting to the floor . . . tops of steel, laminated wood or Masonite.

Further, you can move "Hallowell" Benches wherever, whenever you wish without impairing their rigidity in the slightest; use them separately or put them end-to-end for a smooth, continuous unit.

More than 1300 STOCK STYLES from which to choose . . . at most attractive prices. For catalogs and details, write—

STANDARD PRESSED STEEL CO.

JENKINTOWN, PENNA. BOX 561

BRANCHES

BOSTON • DETROIT • INDIANAPOLIS • CHICAGO • ST. LOUIS • SAN FRANCISCO

Jan. 1. If stocks of trim still remain, the companies may use them after that date by disguising their identity with paint or otherwise. Hub caps and gas tank caps also may be painted under the ban.

Simplification and standardization of passenger car models also is being discussed by OPM with a view to possible action in this line. It has been proposed to eliminate deluxe and heavy models to conserve materials and to drop small-demand models such as convertibles and limousines. Such "luxury" options as two-tone paint jobs, dual horns, special upholstery, lighters, clocks, fender guards and rear fender panels also be eliminated. If OPM believes the situation warrants, it might go so far as to standardize production on coupes and two and four-door sedans and limit the selection to two or three colors.

Priorities and production curtailment may prevent some manufacturers from offering radios and hot water heaters as optional equipment in the near future. The heaters use copper, which is on the restricted list, while radio manufacture has been curtailed.

Production in the industry was estimated at 373,000 passenger cars and trucks for November, a decrease of 27 per cent from November, 1940, and 6 per cent less than October's output of 395,000 units. This will make it the second lowest November total in the last seven years. February's passenger car production quota has been set at 174,122 units, a reduction of 56.1 per cent from February, 1941.

October retail passenger car sales totaled 184,561 units, according to the AMA, a decline of 43 per cent from the same month of 1940 and the

(Continued on page 72)

NOW—More Than Ever—Genuine FORD Parts Are Real Business Builders!



THE EXTRA demands placed upon today's motor cars—longer life, more miles, harder use—all add up to greater profit opportunities for you!

When you use Genuine Ford Parts you are prepared to serve a large part of the motoring population of your community. The owners of Ford Cars and Trucks look to Genuine Ford Parts for assurance of continued top performance. There is good reason for their confidence. These replacement parts are

made of the same high quality materials and to the same high standards of precision as the original parts in their cars and trucks . . . fit properly . . . reflect Ford quality and workmanship.

Build a big bank of *satisfied* customers through the use of Genuine Ford Parts. Cash in on today's demand for longer-wearing, better-performing cars.

Your Ford Parts Distributor maintains a balanced stock for your convenience. He is a good man to know.



FORD MOTOR COMPANY

GENERAL SALES DEPARTMENT
DEARBORN, MICHIGAN

DETROIT LETTER

(Continued from page 70)

lowest for the month since 1938. However, it marked a 65 per cent rise from September sales, which set a 24-month low. October truck sales were up 11 per cent to 59,376 units over the same month a year ago. General Motors consumer deliveries for October totaled 103,854 vehicles, a decrease of 44 per cent from October, 1940. General Motors retail sales for the first nine months of 1940 totaled 1,716,395 units, a gain of

34 per cent over the previous year, while Chrysler Corp. sales for the same period were 840,437 units, an advance of 29 per cent over 1940.

Reasons cited for lower sales of the 1942 models have been the lack of a national automobile show in New York to focus the nation's attention on the new cars, the higher prices due to rising taxes, labor and material costs, the restriction of installment sales to 18 months, and the pre-selling of the 1942 model market during the '41 model season by at least 25 per cent. Dealers are not worrying about rising stocks, knowing they can dispose of their cars

next year when the profits will not add to 1941 tax bills, already high from booming sales in the first half of the year. However, the factories eye the growing inventories warily, fearful that the OPM might further restrict passenger car output on the premise that the present limited production is not selling.

General Motors already has announced that it will make no 1943 model changes and the OPM is expected to require all companies to do likewise. However, most companies have their engineering and research staffs working on improvements that will be introduced whenever model changes are justified by international conditions, be it 1944, 1945 or later.



WHEN YOU NEED BEARINGS watch for the parts jobber's window that features this bearing display. We don't say that you are sure to find there any bearing you may need. But we do say that your chances of finding it there, are better than most any place.

So far as is humanly possible, the AHLBERG All-Bearing Branch has in stock all bearings that are available. And despite the priority demands of the defense program, AHLBERG Jobbers are doing a good job of getting the bearings you need most.



Ahlberg Bearing Company

Manufacturers of CJB Master Ball Bearings
3025 WEST 47th STREET — CHICAGO — 30 WAREHOUSE BRANCHES
Out West at: PRECISION BEARINGS, INC. Los Angeles

READ A MIKE?

(Continued from page 34)

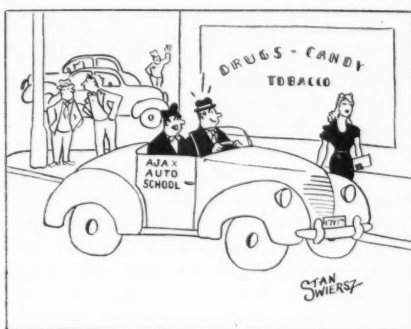
vertical line on the sleeve. Turn the thimble one complete revolution and read the calibrations on the thimble as they pass the horizontal line on the sleeve. They are 5, 10, 15, 20 and then 0, each in turn lining up with the horizontal line on the sleeve. When "0" is reached at the end of the first complete revolution, you have passed through .025 in. (or 25 one-thousandths of an inch), and the edge of the thimble will be at the first vertical line on the sleeve to the right of the "0" vertical line. This indicates that the distance between the anvil "B" and the spindle "C" is .025 in.

Continue turning the thimble through another complete revolution, passing through another .025 in. as indicated by the graduations on the beveled end of the thimble. When "0" on the thimble again lines up with the horizontal line on the sleeve, the distance between the anvil and the spindle is then .050 in., and the edge of the thimble lines up with the second vertical line on the sleeve.

Referring to the same illustration, you will note that the fourth vertical line on the sleeve has a figure "1" above it. Being the fourth line, it represents four complete revolutions of the thimble, or four times .025 in., which equals .100 in. This can be expressed as 1/10 in., but, since mechanics commonly refer to measurements in thousandths of an inch, it is easier to express it as 100 one-thousandths of an inch.

As you continue to turn the thimble you will note that every fourth vertical line on the sleeve has a figure above it—2, 3, 4, 5, and so on. Each figure represents the first figure to the right of the decimal point when writing the measurement in thousandths of an inch; for example, .200 in., .300 in., .400 in., .500 in., etc.

Let us refer again to the illustration. You will note that the edge of the thimble is a little to the right of the first vertical line to the right of



"One of the things to learn, Mr. Mahood—never pass up a stop sign or an opportunity."

the "2" mark on the sleeve. When taking this reading, we know that the first figure to the right of the decimal point is 2, so this would be written as .200. Then there is one vertical line showing to the right of 2, which we know represents .025 in., so this will be added to the first figure, so we now have .225 in. But the edge of the thimble is a little to the right of the vertical line, so we will have to look at the graduations on the beveled edge of the thimble for the additional reading. We note that the figure 15 has passed the horizontal line on the sleeve, and that the first line above 15, which is 16, lines up with the horizontal line, so we know that another .016 in. is to be added to previous readings to get the total. Then we have .200 and .025 and .016 to be added together, which gives a total of .241 in.

With a little practice, following the instructions given, you will soon become expert in reading a mike.

Remember that the micrometer is a precision instrument, and must be handled carefully. Never drop it, or toss it on the bench. Put it away carefully in its case when not in use. Do not force the spindle against the work when taking a measurement, as this may result in damage to the micrometer. Turn the spindle up lightly against the work. A ratchet is provided at the end of the thimble on most micrometers, and when the ratchet slips, it indicates that the spindle is tight enough against the work.

Goodyear Official in OPM

Loaned to the Office of Production Management, Washington, for an indefinite period to help organize its Industrial Promotion Section, Lee J. Bornhofen, manager of Sales Promotion for The Goodyear Tire and Rubber Co., Akron, has been assigned to set up the new section under the Division of Contract Distribution, of which Floyd B. Odum, New York, is director.

The Industrial Promotion Section is a move on the part of the administration to help smaller business units of the country obtain a fair share of defense orders and to prevent, as far

as possible, dislocation of industry and unemployment of workers in plants where production has been curtailed by priorities and material shortages.

GM September Sales

Decline from 1940 Total

October sales of General Motors cars and trucks in the United States and Canada, including export shipments, totaled 179,120 compared with 226,169 in October a year ago. Sales in September were 89,300. Sales for the first 10 months of 1941 totaled 1,964,233 compared with 1,584,326 for

the corresponding 10 months of 1940.

Sales to dealers in the United States totaled 162,543 in October compared with 207,934 in October a year ago. Sales in September were 81,169. Sales for the first 10 months of 1941 totaled 1,796,455 compared with 1,457,817 for the same 10 months of 1940.

Sales to consumers in the United States totaled 103,854 in October compared with 186,016 in October a year ago. Sales in September were 52,829. Sales for the first 10 months of 1941 totaled 1,820,249 compared with 1,471,210 for the same 10 months of 1940.

SOMETHING HERE YOU OUGHT TO KNOW

Ahlberg
FRONT
WHEEL
BEARING SERVICE

YOU KNOW, OF COURSE, that you can't make money servicing cars today with just a monkey wrench and a screw driver. But perhaps you don't know how easy it is to make profits with this modern Ahlberg Front-Wheel-Bearing Service Unit.

Here is a smart outfit that contains a genuine Croft replacement washer, packer and dryer, plus a stock of ings as you "spot" them and get that worn bearing. This unit is making friends and money for hundreds of service men just like you. Better look into it. See your nearest Ahlberg Jobber or write us direct,—

Ahlberg Bearing Company

Manufacturers of CJB Master Ball Bearings
3025 WEST 47th STREET — CHICAGO — 30 WAREHOUSE BRANCHES
Out West at PRECISION BEARINGS, INC. Los Angeles

THE ENGINE OIL LEAK PUZZLE

(Continued from page 21)

all for filin' the bearing cap. But he don't do it in this shop. When you file a cap, you get an oval-shaped bearing that lets oil leak out along the sides.

"There's another reason for a leak at the rear main," Pop went on. "Sometimes the shell don't bottom properly in the case and in the cap. So, whenever you install a new bearing, make sure the bearing shells are properly installed in the cap and in

the case. We've got special tools for doing the job.

"Some manufacturers say the bearing shell ought to extend a few thousandths beyond the cap and the case. When the bolts are tightened, the shell will be tight and unable to rotate. Then no oil can leak behind the shell."

"Thanks, Mr. O'Neill," said Chuck. "I better get started on this job."

"I haven't told you much about that rear main bearing leak yet," said Pop.

"Not much!"

"That's what I said. Did you ever find a leak that was caused by a clogged drain pipe?"

Chuck shook his head.

"Well, it can happen. There are two chief types of drain pipes. One has a U bend in the drain; the other has the end of the drain below the oil level. That's done to keep from setting up pressure in the crankcase which would force oil out the bearing. When the drain pipe gets clogged, pressure builds up and you have a leak. I remember once when I extended the drain pipe clear over to within an inch of the oil pump. The action of the pump pulled the oil away from the bearing. And you always want to be sure the bearing cap fits properly against the crankcase. If the bearing takes an oil seal, be sure it's right."

Pop noticed that Chuck seemed to be bursting with a question. "Some-thing you want to ask?" he said.

"Jim was cussin' a jalopy we had in last week because it kept on leakin' after he'd put in new bearings."

"I remember that one. But Jim finally licked in. There was too much pressure in the crankcase. And I remember one we had a few months ago. The flywheel and clutch were sucking the oil right out through the rear main bearing."

"The flywheel and clutch?" repeated Chuck.

"That happens every once in a while. The flywheel and clutch act like a centrifugal blower and set up a partial vacuum at the center. You can lick that sometimes by cutting holes in the flywheel or clutch housing."

Pop hitched up his belt.

"That about covers the oil leak situation this mornin', I guess."

"You certainly didn't overlook anything."

Pop frowned. "Yes I did, too. I clean forgot about gaskets and pack-in'. You've got to install them right or you're lookin' for trouble. And, when you get a car that don't have no openin' between the timing-gear case and the crankcase except the oil drain hole, make sure the passage is clear. Better still, you can often enlarge the openin' so as to lower the oil level in the timing-gear case. And just one more thing. Always be sure to check the oil slingers. These are made of relatively light metal and are easily bent. They have to be true and the larger member must overhang the smaller." Pop grinned. "Think you can remember all this stuff?"

"Most of it," said Chuck. "Anyway I won't forget to check the camshaft rear bearing."

"Well, if you do forget, you can at least ask again. Any time you see a man who boasts about bein' a mechanic for thirty years, it's a mechanic who never asks questions."

And with that Pop went back to the office and the morning mail.



*Smooth
Performance*

LINK-BELT

SHAFTER

ROLLER BEARINGS

FOR FRONT WHEELS, DIFFERENTIALS AND REAR AXLES



The amazingly smooth action of Link-Belt Roller Bearings assures miles and miles of extra wear. The exclusive roller and raceway design provides for constant perfect alignment and greater load capacity. From every angle, you will find these bearings give you more for your money and deliver the kind of service you want. Your Jobber is ready to supply you with Link-Belt Bearings—see him today!

LINK-BELT COMPANY

519 N. Holmes Ave., Indianapolis, Ind. Warehouses in all principal trading centers
Made by the makers of the famous Silverstreak Silent Timing Chain!

Trevellyan to Head Oldsmobile Sales

H. A. Trevellyan has been named general sales manager of Oldsmobile to succeed D. E. Ralston, who has been chosen manager of Oldsmobile's automotive operations. G. R. Browder and J. H. Lemons have been named assistant general sales managers, Browder to head the Western sales while Lemons directs sales activities in the East. V. C. Havens has been named director of advertising and sales promotion.



H. A. Trevellyan

R. E. Griffin, manager of Oldsmobile defense operations, will be assisted by R. L. Myers, former assistant general sales manager, F. Q. Murphy, former Atlantic Regional manager, and W. O. Lampe, former sales promotion manager.

Trevellyan, well-known throughout the automobile industry, has been associated with Oldsmobile and other divisions of General Motors Corp. since 1919. He served his apprenticeship in the business as parts manager and sales representative for the Oldsmobile distributor in Chicago. He joined the Olds Motor Works in 1925 and successively held the position of sales representative, assistant zone manager and Chicago manager.

RETREADING

(Continued from page 29)

used to buff tires to insure uniformity and balance.

"We have always worked on the theory," says C. C. Howland, "that we could not recap any carcass which we felt certain would not give proper service after being recapped. Our records show that we reject 42 per cent of all carcasses offered us for recapping."

As the result of this effort to handle all types of retreading and recapping in a manner that makes satisfied customers, the Godel-Howland Co. has built up one of the largest recapping and retreading businesses in its section of the country.

Thomas New Chairman of Firestone Board

At a meeting of the board of directors of The Firestone Tire and Rubber Co. last month, president John W. Thomas was elected chairman of the board, which office has been vacant since the death of Harvey S. Firestone in February, 1938, and Harvey S. Firestone, Jr., vice-president, was elected president of the company.

At the same meeting, Lee R. Jack-

son, vice-president in charge of sales, was made executive vice-president, and John G. Shea, treasurer, was elected vice-president and treasurer. H. D. Tompkins, who has been assistant to Jackson, was named vice-president in charge of sales.

Plastic Upholstery

A new plastic fabric, woven like cloth, which is said to be stainless, flexible, tough as steel, and fireproof, was an outstanding attraction at the recent Modern Plastics Exposition in the U. S. Department of Commerce Building at Washington. Known as

Saran, this new cloth was exhibited by The Firestone Tire & Rubber Co.

At present its most important use is in upholstery for furniture and for motor cars, buses, airplanes and other transportation units where seating receives exceptionally hard wear. Experiments now under way indicate its application will be much more widely extended, including room interiors, airplane partitions, table tops, etc. It is already in experimental service on the New York subways. The U. S. Maritime Commission is investigating its advantages for equipping furniture on new passenger ships.

CARE WILL SAVE YOUR CAR

ENLIST THIS SLOGAN IN THE DEFENSE OF CAR AND COUNTRY

LAPEL BUTTON

WINDSHIELD STICKER

POSTER STAMP

CARE WILL SAVE YOUR CAR

USE NIEHOFF IGNITION PARTS

WALL STREAMER

... and Let NIEHOFF
FREE DISPLAY MATERIAL
Tie YOUR Shop Directly To This Business-Building Theme

Here's YOUR opportunity to PROFITABLY go all-out for National Defense! This FREE NIEHOFF "Care Will Save Your Car" program is so timely and so complete that You're Bound To Win!

There'll be NEW business for YOU in '42 with this program. And, remember there's complete customer satisfaction and a high percentage of repeat sales with NIEHOFF Quick-Service Ignition Parts because they SAVE Gas . . . SAVE Oil . . . SAVE the Battery . . . SAVE needless Wear . . . and assure longer, better performance!

You can't afford to sit back and wait! Send for full details on how this "Care Will Save Your Car" program will build your ignition business in 1942. Do it NOW!

CHICAGO, ILL.

C. E. NIEHOFF & CO., 4919 W. Lawrence Ave.

NIEHOFF

TAKE OFF
with
NIEHOFF
TODAY

NEWS

(Continued from page 44)

on the part of the retailers to go along with the OPA in its effort to prevent runaway price rises.

Earlier in October, Leon Henderson told manufacturers he had no objection to moderate price rises. List prices to consumers on tires and tubes might be lifted, he indicated, as much as nine per cent above the June 16, 1941, level. Inasmuch as retailers are now paying more for new purchases, their failure to raise prices on tires

and tubes already in stock shows great restraint. As a result, customers don't find it so hard to pay the new tax, which now amounts to \$1.05 on a 6.00-16 tire.

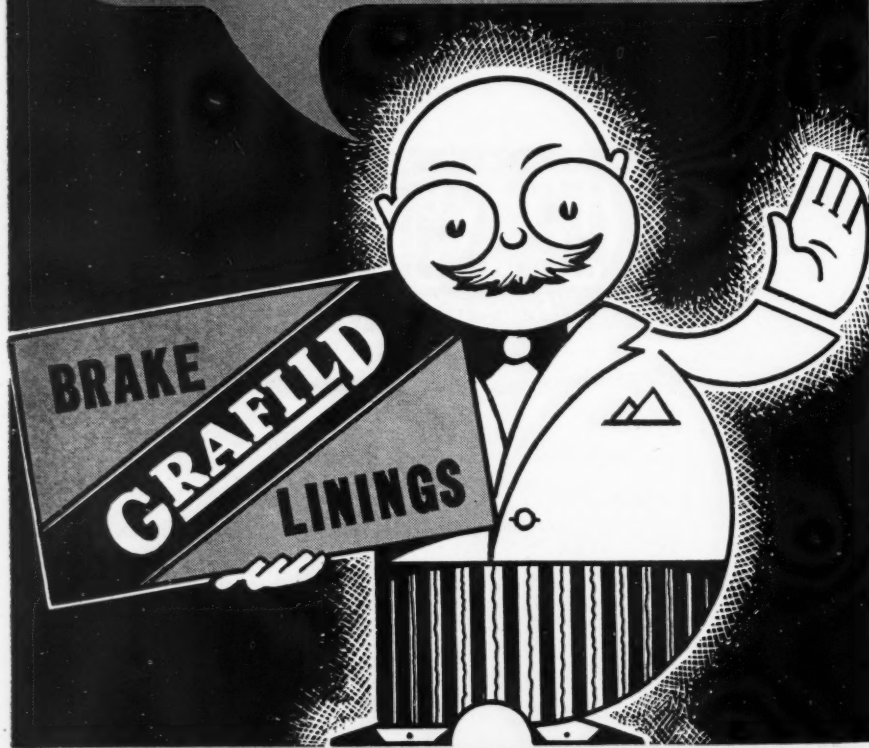
Cleaning Manual

The Fleet Operators Cleaning Handbook is the title of a new manual issued by Magnus Chemical Co., Inc., 167 South Ave., Garwood, N. J. It illustrates and describes the various compounds made by the company to meet the cleaning problems of the fleet operator, both vehicle and shop. Write for your copy.



"Here comes a car now. I'll hide and you just stand there and look helpless."

RELINE WITH **GRAFILD**
... and get that
CERTAIN feeling!



WORLD BESTOS CORP., Paterson, New Jersey

ROLLS • SETS • SLABS • BLOCKS • CLUTCH FACINGS

Upholstery Cleaner and Dye

A combination cleaning and dyeing compound for removing grease and dirt and restoring color and luster to the different types of upholstery, has been announced by the Magnus Chemical Co., Inc., Garwood, N. J. The product is known as DY-KLE-N. It is used by mixing the contents of a pint bottle of DY-KLE-N with 8 quarts of hot water, and is applied to the fabric with a stiff brush. The manufacturer claims that this product will not streak or smut, and will restore original luster to the upholstery. A special introductory offer is being made of a complete kit, including everything necessary to do 12 sedans, for \$18.

Perfect Circle Begins

Fourth New Building

Razing of buildings and ground breaking for the fourth new building being erected by The Perfect Circle Co. to provide additional necessary space for defense contract requirements was under way Nov. 6 at Hagerstown, Ind.

The new building will be used to house the rapidly expanding aircraft division. Previously the company has built a warehouse which is expected eventually to handle all storage needs. Another building at the Hagerstown plant is a two-story addition, making available 9400 sq. ft. of space which is now occupied by the tool room, inspection and other departments.

Last September a \$175,000 addition was completed at the New Castle plant, where ring castings are manufactured.

The new aircraft building will be 60 by 175 ft., and will be located directly west of the present Hagerstown manufacturing plant.



A NEEDED SERVICE



that pays right away

Here is a service you get paid for right away and it is needed because it helps keep America's necessary car and truck traffic moving in spite of winter ice and snow.

Supply Weed Tire Chains . . .

Service Weed Chains . . .

Offer to put on Weed Chains

This winter every effort must be made to keep cars and trucks running with a minimum of accidents and delays. Skidding accidents waste automotive equipment and getting stuck in the snow wastes gas. Every time you put a pair of WEED CHAINS on a customer's car you help prevent both of these wastes, to say nothing of painful personal injuries and fatalities.

WEED AMERICAN BAR-REINFORCED TIRE CHAINS also save steel by giving more than double the mileage of ordinary chains.

WEED AMERICAN BAR-REINFORCED

The Best Buy in Tire Chains

Weed American superiority is based on these 4 great features:

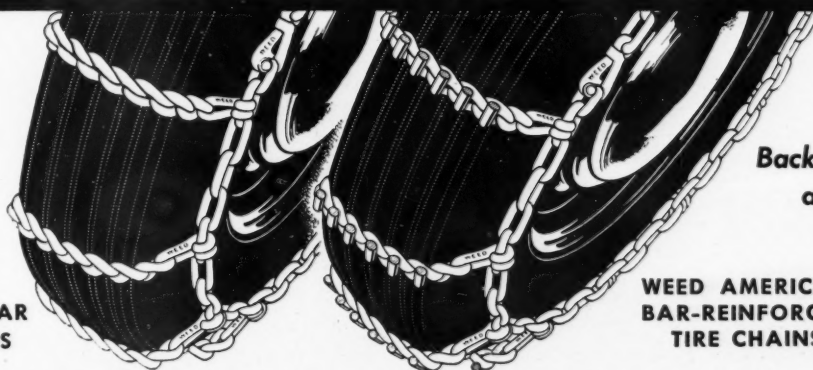
1. Bar-Reinforcements on links give double the service.
2. Weedalloy—a stronger, tougher metal.
3. Patented Lever-Lock End Hooks—easy to use and positive fastening.
4. Side Chains welded and hardened to resist wear on curbs and ruts.

Complete your service by offering to inspect and repair tire chains, and to put them on for a moderate fee. Ask your jobber about the Weed Profit-Pak and Handi-Pak. *P. S. Sell Weeds for Christmas Presents.*

AMERICAN CHAIN & CABLE COMPANY, INC., YORK, PA.



TRADE MARK



**WEED REGULAR
TIRE CHAINS**

**WEED AMERICAN
BAR-REINFORCED
TIRE CHAINS**

*Backed by 40 years of research
and national advertising*

Get your car ready for WINTER

CHANGE TO WINTER OILS AND LUBRICANTS

BEFORE YOU PUT IN ANTI-FREEZE, CHECK RADIATOR, NOSE, FAN-BELT

CHECK FILTERS

CHECK TIMING AND COMPRESSION

TUNE-UP THE MOTOR

CHECK BATTERY, GENERATOR, WIRING

INSPECT SPARK PLUGS, COIL, DISTRIBUTOR

TEST WHEELS, TIRES, BRAKES, CHAINS

TEST LIGHTS, WIPERS, DEFROSTER, HEATER

INSPECT MUFFLER

PROTECT THE FINISH

CHECK CLUTCH

You know the old saying: "Prevention is the best cure." Well, it's true. The best way to keep your car in top condition is to take care of it before it gets into trouble. That's why we've put together this list of things to check before winter sets in. It's a "Must" in the Nation's defense program.

This winter, preventive service becomes more a matter of your personal comfort, safety, and economy. It's a "Must" in the Nation's defense program.

Don't Let Your Anti-Freeze Make a Get-away

In the winter, the danger of anti-freeze is not just that it will freeze. It's that it will evaporate. And when it does, it leaves a sticky residue that can clog your radiator. So, before you put in your anti-freeze, check the radiator for leaks. If you find any, fix them before you put in the anti-freeze. And, when you do put it in, make sure it's the right kind for your car. The wrong kind can do more harm than good.

You Need a Muddy Battery in Winter

With your car's battery, you need to be ready for anything. In winter, the cold can make your battery work harder than ever. So, before you put in your battery, check it for signs of wear. If it's old, it's time to replace it. And, when you do, make sure it's the right kind for your car. The wrong kind can do more harm than good.

Get the Most Out of Your Gasoline

Gasoline is a precious commodity in winter. So, before you put in your gasoline, check it for signs of wear. If it's old, it's time to replace it. And, when you do, make sure it's the right kind for your car. The wrong kind can do more harm than good.

The Value of a Tune-Up

A tune-up is a must for your car in winter. It's the best way to make sure your car is in top condition. So, before you put in your tune-up, check it for signs of wear. If it's old, it's time to replace it. And, when you do, make sure it's the right kind for your car. The wrong kind can do more harm than good.

Check Your Oils and Lubricants

Oil is the lifeblood of your car. In winter, it's even more important. So, before you put in your oil, check it for signs of wear. If it's old, it's time to replace it. And, when you do, make sure it's the right kind for your car. The wrong kind can do more harm than good.

Check Your Spark Plugs, Coil, and Distributor

Spark plugs, coil, and distributor are the heart of your car's engine. In winter, they're even more important. So, before you put in your spark plugs, coil, and distributor, check them for signs of wear. If they're old, it's time to replace them. And, when you do, make sure they're the right kind for your car. The wrong kind can do more harm than good.

Check Your Battery, Generator, and Wiring

Battery, generator, and wiring are the lifeblood of your car's electrical system. In winter, they're even more important. So, before you put in your battery, generator, and wiring, check them for signs of wear. If they're old, it's time to replace them. And, when you do, make sure they're the right kind for your car. The wrong kind can do more harm than good.

Check Your Tires, Brakes, and Chains

Tires, brakes, and chains are the lifeblood of your car's safety. In winter, they're even more important. So, before you put in your tires, brakes, and chains, check them for signs of wear. If they're old, it's time to replace them. And, when you do, make sure they're the right kind for your car. The wrong kind can do more harm than good.

Check Your Lights, Wipers, Defroster, and Heater

Lights, wipers, defroster, and heater are the lifeblood of your car's visibility. In winter, they're even more important. So, before you put in your lights, wipers, defroster, and heater, check them for signs of wear. If they're old, it's time to replace them. And, when you do, make sure they're the right kind for your car. The wrong kind can do more harm than good.

Check Your Muffler

Muffler is the lifeblood of your car's exhaust system. In winter, it's even more important. So, before you put in your muffler, check it for signs of wear. If it's old, it's time to replace it. And, when you do, make sure it's the right kind for your car. The wrong kind can do more harm than good.

Protect the Finish

Protecting the finish of your car is important in winter. So, before you put in your finish, check it for signs of wear. If it's old, it's time to replace it. And, when you do, make sure it's the right kind for your car. The wrong kind can do more harm than good.

Check the Clutch

Clutch is the lifeblood of your car's transmission. In winter, it's even more important. So, before you put in your clutch, check it for signs of wear. If it's old, it's time to replace it. And, when you do, make sure it's the right kind for your car. The wrong kind can do more harm than good.

P.S.

PREVENTIVE SERVICE
Recommended by Dealers
for Motor Car Owners

PS.

PREVENTIVE SERVICE
Recommended by Dealers
for Motor Car Owners

Catch the Putter-Offers With P.S.



No other magazine is doing the tremendous job Collier's does, month after month, in selling your shop to millions of car-owners. No matter what you personally do about it, some of your shop-business is due to Collier's P.S. Campaign. Get the most out of it by telling car-owners you are "P.S. Headquarters."

LOOK over your list of customers and pick out the ones who haven't been in for winter service.

They're the putter-offers!

They've got sense enough to come in out of the cold—but they need a little jolt.

It'll *pay you* to give it to them! And you can't find a better jolt than the P.S. Tie-In Material!

These P.S. helps warn motorists that winter won't wait... pound home the patriotic need for Preventive Service this year... tell them



**MAIL THIS CONVENIENT
ORDER BLANK NOW!...**

what their cars require to be ready for winter.

Collier's tells it—with all the authority of The National Weekly. You sell it—and cash in!

Thousands of dealers have proved the value of P.S. with millions of P.S. tie-ins to their customers. Get going today!

PREVENTIVE SERVICE,
Collier's, 250 Park Avenue, New York City.

Please ship me the following P.S. Tie-In Material. I am enclosing a check for \$_____ to cover the cost.*

QUANTITY	MATERIAL	PRICE	COST
	K-1 MOUNTED REPRINT. Full-size, color reproduction of the Collier's winter P.S. Feature. Mounted on stiff plyboard, with easel. You'll want several for counter and floor displays.	2 FOR 25c	
	K-2 PLAIN PROOF. Full-size, color reproduction of the Collier's Winter P.S. Feature. Ideal to mail to your Number One list. (Minimum order: 100)	\$2 PER 100	
	K-3 QUESTION & ANSWER BOOKLET. Also ideal for your Number One mailing list. Questions and answers show your customers the necessity for many winter jobs not covered in the P.S. Feature. (Minimum order: 200)	\$1 PER 100	
	K-10 P.S. BADGES. These curiosity-arousers, worn by your men, get customers talking and asking questions. They're in brilliant red and black, 2 1/8 inches in diameter, and read: "P.S. for Personal Safety." You'll want one for each man.	5c EACH	
		TOTAL \$	

Firm Name _____

Street _____

City _____ State _____

Authorized Signature _____

*Minimum order, \$3.00. Payment must accompany this order blank. All shipments made by express, charges collect.

Collier's P.S.

campaign

Plymouth's newest convertible coupe. The floor is lower and the rear seat wider than before. The 95-hp. engine is new. Pleated red leather upholstery is standard, and the power-operated top comes in tan or black.



VAN DORN Electric Sanders



are Rolling Out JOBS FASTER

BECAUSE they have more power and speed, because they have always been built to "stand up and take it"—Van Dorn Electric Sanders are helping shops turn out work ahead of time. They clean and finish fenders and bodies, smooth welds, rub down lacquer—and

perform dozens of other similar sanding or buffing operations. They are light in weight and perfectly balanced to reduce fatigue. All vital mechanism is sealed against abrasive dust. The Van Dorn Electric Tool Co., 727 Joppa Road, Towson, Maryland.



"Van Dorn"
(DIV. OF BLACK & DECKER MFG. CO.)

PORTABLE ELECTRIC TOOLS

3 Groups Call Off Annual ASI Exhibit

Following a meeting of the presidents of the MEMA, the MEWA, and the NSPA, at Chicago last month, it was announced that the annual ASI Show, originally scheduled for Atlantic City next February would not be held.

A poll taken by the Joint Operating Committee showed 503 voting against holding the show and only 269 favoring it. Sentiment for the show was greatest among MEWA jobbers, who favored the show by a good margin. Balloting among the various other divisions swung the decision definitely away from the annual exhibit.

The NSPA is holding a meeting at Chicago during December. The MEWA and MEMA will hold concurrent conferences next February at the Stevens Hotel in Chicago.

Machinery for holding the annual ASI show, when it is resumed after the present emergency, remains with the MEMA and MEWA.

American Brakeblok Completes Buildings

The American Brakeblok Division of the American Brake Shoe and Foundry Co., which produces automotive and industrial brake materials, completed an extensive plant enlargement and improvement program in Detroit and at Wayne, Mich., last month.

The Detroit additions, now equipped and in operation, consist of a four-story building with 68,000 square feet of floor space and a three-story building containing 28,000 square feet of space. The four-story building is used by the shipping department and the advertising department. It also contains executive offices of the production department and offices and laboratories for the division's chemical control, research and experimental departments.

The new building in Wayne is to be used for storage of raw and finished materials, and as a garage for the division's test automobiles and trucks. It will contain 49,000 square feet of floor space with a large covered loading dock.



Story of a night flight

IT'S A TOUGH JOB . . . transcribing radio messages quickly, and legibly, in the blacked-out interior of a Navy bomber on night patrol.

Any radio operator will tell you that it is no job for pad and pencil.

It is a job for a special kind of typewriter . . . for a machine so delicately tuned that it will be instantly responsive to the flying fingers of a Navy radio man . . . and so ruggedly built that the shattering concussions of gun fire and the shocks of hundreds of

landings will not mar the smoothness of its operation.

It is, in short, a job for the same kind of Royal Typewriter that *you* may buy any day in the week.

This fact gives us, here at Royal, the greatest satisfaction . . . the fact that our standard stock machines continue in smooth, perfect operation under such grueling conditions.

To us, this is convincing proof of Royal's right to the title: "The World's Number 1 Typewriter."



ROYAL *World's No. 1* TYPEWRITER

Morris Again Named To Head Battery Group

Delegates to the Association of American Battery Manufacturers convention in Chicago unanimously re-elected Benjamin F. Morris, of Thomas A. Edison, Inc., to the presidency for the ensuing year.

Other officers re-elected were: E. T. Foote, Globe-Union, Inc., first vice-president; J. H. McDuffee, Electric Auto Lite Co., second vice-president; A. H. Daggett, National Battery Co., secretary; L. A. Doughty, Carlile and Doughty, treasurer. The following

were re-elected directors: O. V. Badgley, Delco-Remy; A. J. Baracree, Am-Plus Storage Battery Co.; H. C. Montgomery, Hobbs Battery Co.; Lester Perrine, Perrine Quality Products Corp.; Ward Perry, Volta Battery Co., and L. B. F. Raycroft, Electric Storage Battery Co. V. L. Smithers was reelected commissioner.

Morris is vice-president of Thomas A. Edison, Inc., Edison Battery Division, Kearny, N. J., and began his career with the Edison Industries under the famed inventor Thomas Alva Edison's direction 25 years ago. When Edison became interested in automobile starting, lighting and ignition

batteries in 1918, Morris was the engineer. He acquitted himself so well in this and other undertakings that, in 1935, Morris went to the Kearny plant to give his support to increasing production, accelerating new developments and searching out better ways of putting finer ingredients into Edison Batteries.

Mays, Hepburn, Bergere Top National Race List

Following last month's announcement in MOTOR AGE that Rex Mays had again been declared national racing champion, the American Automobile Association Contest Board has released the full standings. These show Ralph Hepburn in second place and Cliff Bergere in third.

Floyd Davis, in whose car Mauri Rose finished first at Indianapolis, is fourth and Chet Miller fifth. Rose, by finishing third at Milwaukee and fourth at Syracuse, is eighth in the standings. The complete standings as of Oct. 15 follow:

Position	Driver	Indianapolis 5/30	Milwaukee 8/24	Syracuse 9/1	Total
1	Rex Mays	(2) 825	(1) 200	(1) 200	1225
2	Ralph Hepburn	(4) 550			550
3	Cliff Bergere	(5) 450			450
4	Floyd Davis	*(1) 360		(5) 90	450
5	Chet Miller	(6) 375	(8) 55		430
6	George Connors		(2) 165	(3) 135	300
7	Frank Wearne	(8) 275			275
8	Mauri Rose	*	(3) 135	(4) 110	245
9	T. Bettenhausen		(6) 75	(2) 165	240
10	Paul Russo	(9) 181			181
12	Al Putnam	(12) 57.75	(4) 110		167.75
14	Harry McQuinn	(7) 159.25			159.25
15	Louis Tomei	(11) 125			125
16	George Robson		(7) 65	(9) 45	110
17	Frank McGurk		(9) 45	(7) 65	110
18	Emil Andres		(5) 90		90
19 D	Tony Willman			(6) 75	75
21	Walt Brown			(8) 55	55
22	Louis Durant	44 R			44
23	Duke Nalon			(10) 35	35

*—Co-Winner with Mauri Rose.

*—Points not allotted for Indianapolis because of having started in another car in race.

R—Relief for Russo. D—Deceased.

Fisher Body to Erect Tank Building Plant

E. F. Fisher, general manager of the Fisher Body Division of General Motors, has announced that work will begin immediately on the erection of a tank manufacturing plant in the Flint, Mich., area. His statement followed announcement by the Defense Plant Corp. in Washington that \$25,782,000 had been allotted the Fisher Body Division for plant, facilities and equipment.

The building, which will have 500,000 square feet of floor space, will be used for manufacture of both heavy and medium tanks. Orders for these tanks still are in negotiation. Tank parts will be fabricated at Fisher Body Plant No. 1 in Flint, at the Buick Division in Flint and by numerous subcontractors. It is expected that when tank production reaches a peak 15,000 men will be employed on this work in Flint.

MILLIONS of motorists place efficient and uninterrupted car performance above the initial price of parts. They prefer long range economy to low initial cost!

These statements are proved by the wide and steadily growing acceptance of Blue Streak Ignition Parts by car owners everywhere.

Blue Streak Ignition Parts overcome every weakness in the design and construction of conventional ignition parts. They are built for "long life peak performance"—to give greater efficiency from the start—and to retain their efficiency over prolonged periods out of all proportion to their slight additional cost.

STANDARD MOTOR PRODUCTS, INC.
37-32 Northern Blvd., Long Island City, N. Y.

"The ABILITY to serve well is as important as the WILL to do so."

What your defense dollars buy



The TANK is to the Army what the tackle is to the forward line of a football team. It is the "break-through." Head-on, it crashes timber, houses, enemy fortifications. Once it has opened the way, the attacking force follows for the "mopping up."

The Nazis, using these great steel pachyderms which they produce in vast quantities, have been able to break through every fortified line in 14 conquered countries.

In America, the medium-sized tank is the popular size. A medium-size tank weighs 30 tons. To make it takes as much steel as would be used in 500 refrigerators, as much rubber as goes into 87 average automobile tires.

The planning of a tank takes as great skill as a large-scale construction job. One recently converted automobile plant, faced with retooling for tank production, had to put 200 engineers to work in day and night shifts for one month, mapping out machinery requirements and plant layout.

To match the mechanical might of aggressor nations today, America needs thousands of these tanks. They're rolling off the assembly lines now. They cost real money. Every time you buy an \$18.75 Defense Savings Bond or a 10¢ Defense Saving Stamp, you give your country money enough to buy a vital part for another new tank.



BUY DEFENSE SAVINGS BONDS and STAMPS

AT ALL BANKS, POST OFFICES, AND SAVINGS AND LOAN ASSOCIATIONS

AAA to Make Drive for Repeal of Use Tax

A determined drive for immediate repeal of the federal "use" tax of \$5 per vehicle will be the first order of business as the American Automobile Association swings into action to effectuate the broad-gaged program of action adopted at the recent annual meeting of A.A.A. motor club delegates at White Sulphur Springs, W. Va., the national motoring body has announced.

"Our association has withdrawn active public opposition to the principle

of federal taxation of the motor vehicle," said Thomas P. Henry of Detroit, Mich., president of the AAA, "but at the same time the motor club delegates felt that we should not be called upon to submit to a tax as unfair, inequitable, unscientific, and unjustifiable as this so-called 'use' tax. Accordingly, a resolution was adopted calling for its immediate repeal. The text of this resolution, unanimously adopted by more than 600 representatives of motor clubs throughout the nation, is going forward immediately to those responsible for federal taxation policies.

"Meanwhile, programs are going forward to carry out the terms of another resolution which called for wholehearted cooperation by motor clubs and motorists generally with civilian defense efforts."

Reo's Overseas Sales

Establish New Record

Overseas sales of Reo trucks and buses for October topped all previous monthly records in the history of Reo Motors, Inc., according to Export Manager John T. Clark. October was the largest export month both in number of orders received and total dollar volume.

Dollar volume for October exceeded by \$27,552.64, the previous high record registered in April, 1941. This business was entirely with Reo distributors, the figures for October including no government business nor war orders, Clark pointed out.

October overseas business included shipments to South Africa, Hawaii, Australia, Mexico, Chile, Argentina, Puerto Rico, Newfoundland, and Uruguay.

Oldsmobile Shifts Five

Appointments affecting the offices of four assistant zone managers and a business management manager in various sections of the country have been announced by D. E. Ralston, Oldsmobile's general sales manager.

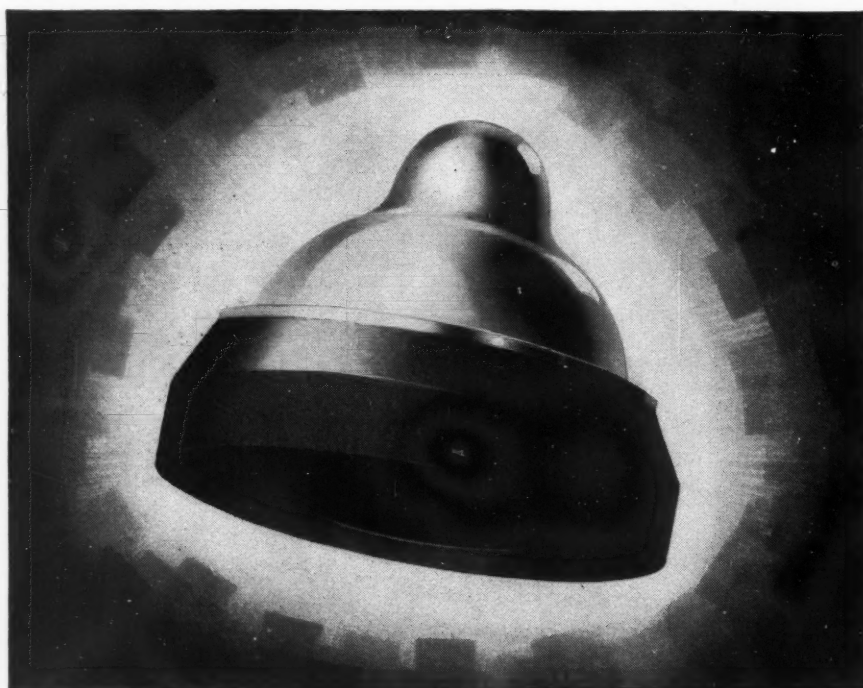
J. E. Straud, formerly assistant zone manager in Milwaukee, has been named assistant zone manager in Oakland, Cal. C. W. Schulze, assistant zone manager in Omaha, succeeds Straud in Milwaukee. W. J. Harmel, district representative in the Oklahoma City zone, has been promoted to assistant zone manager in Omaha. Harry R. Lee, formerly zone business management manager in Minneapolis, has been elevated to the office of assistant zone manager in St. Louis. Lee succeeds C. A. Blake recently transferred to the Oldsmobile office staff in Lansing. C. F. Deist, district representative in Minneapolis, has been promoted to business management manager in the same zone.

Extra Dividend

At a meeting of the directors of the Yellow Truck & Coach Manufacturing Co., a quarterly dividend of \$1.75 per share was declared on the company's 7 per cent cumulative preferred stock, payable Jan. 2, 1942, to stockholders of record Dec. 9.

The directors declared the regular dividend of 25 cents on the company's common stock and 25 cents on the company's Class B stock, payable Jan. 2, to stockholders of record Dec. 9.

The directors also declared an extra dividend of 50 cents on the company's common stock and the Class B stock, payable Dec. 23, to stockholders of record Dec. 9.



THE SAFETY SEAL OF MORE THAN 100,000,000 TIRE VALVES

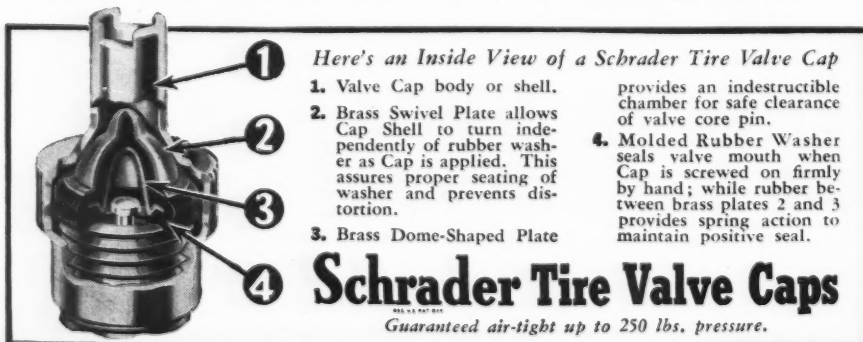
This is the sealing unit of a standard Schrader Tire Valve Cap, enlarged more than eight times. See below, its unique construction features and how it makes an absolute seal at the tire valve mouth. Dirt and water can't get in. Even if the valve were damaged beyond repair, air could not escape.

The service records of leading truck, bus and taxi fleet operators show that the use of air-tight valve caps helps maintain more ac-

curate tire pressures. As a result they get greater mileage, safer operation and have fewer roadside delays.

When you buy valve caps ask for Schrader . . . the caps with this exclusive safety seal. And be sure the tubes you sell are equipped with standard tire valve caps.

A. SCHRADER'S SON, BROOKLYN, N. Y.
Division of Scovill Manufacturing Co., Inc.



Here's an Inside View of a Schrader Tire Valve Cap

1. Valve Cap body or shell.
2. Brass Swivel Plate allows Cap Shell to turn independently of rubber washer as Cap is applied. This assures proper seating of washer and prevents distortion.
3. Brass Dome-Shaped Plate

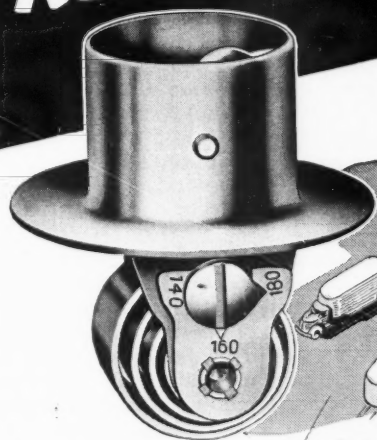
provides an indestructible chamber for safe clearance of valve core pin.

4. Molded Rubber Washer seals valve mouth when Cap is screwed on firmly by hand; while rubber between brass plates 2 and 3 provides spring action to maintain positive seal.

Schrader Tire Valve Caps

Guaranteed air-tight up to 250 lbs. pressure.

This Year
REPLACEMENT PARTS AND MAINTENANCE WILL
KEEP 'EM ROLLING!



This Dole Adjustable Thermostat may be used to replace an original equipment thermostat or can be easily adjusted for hot water heater service. Controlled motor temperature reduces oil dilution, sludge, and ring varnish—cuts operating costs—adds to motor life.

DOLE

*Replacement
Thermostat*

● The automotive industry is rapidly adapting itself to the Defense Program. With the decrease in new production, will come the need for more careful maintenance—more replacements as fleet operators require more miles from each truck—car owners more years from the "old bus."

Dole Thermostats—pioneers of the replacement types—are designed to replace old equipment, reduce repair bills, and prolong the useful life of trucks and passenger cars. They are ready to help "keep 'em rolling."

As manufacturers not only of Dole Thermostats but of many parts for the Defense Program, we are adapting our production to varied demands. However, we shall put forth every effort to keep the thermostats "rolling" to our customers with the best possible service.

THE DOLE VALVE CO.

1901-1941 Carroll Avenue, Chicago, Illinois

CHARGE BATTERIES
more QUICKLY with
FOREMAN
MOTOR-GENERATOR Type
FAST CHARGER

Simple and Safe
Fully Automatic
No Overcharge
Operates Easily
Low First Cost
Low Upkeep

See your JOBBER
or write us for details



W. D. FOREMAN 5359 S. STATE ST. CHICAGO, U.S.A.

FOR FAST BATTERY CHARGING

FOREMAN BATTERY BOOSTER

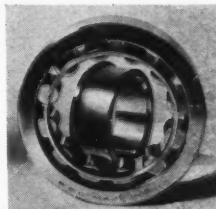
Keep the Tractors Rolling with
RBC TRACTOR BEARINGS

- Over 1,500,000 tractors in operation on U. S. farms.
- It is estimated that probable replacement sales are 20% of entire automotive potential.
- Send for Tractor Bearing Catalog and get your share of this business.

ROLLER BEARING COMPANY

of AMERICA

26 Whitehead Road TRENTON, N. J.



MOTOR AGE

—is a publication keyed directly to the needs of the maintenance field. Built on the requirements of the serviceman. Edited by Bill Toboldt. Read it every month.

A Chilton Publication

CHESTNUT AND 56TH STS.
PHILADELPHIA, PA.

NADA Headquarters

Moved to Washington

Headquarters of the National Automobile Dealers Association will be transferred from Detroit to Washington after Dec. 1, it was announced by the executive committee following a meeting in Detroit.

The change was made necessary by the pressing demands for a larger personnel in the nation's capital to serve the interests of automobile dealers in problems growing out of the defense program, and to make possible closer cooperation with government agencies.

Staff members and key employees will further augment the personnel in Washington, but the statistical compilation department, which studies used car values and trends, will remain in Detroit for the time being.

Electric Group Elects

Edward H. Praefke, Milwaukee, Wis., was reelected president of the Wisconsin Automotive Electric Association at the recent two-day convention in Milwaukee. Al Benicke, Madison, was named vice president and Eric Ericksen, of Fond du Lac, secretary-treasurer.



"Oh boy, I'll take five of them."

Speakers included Spencer Potter, Detroit, president of the national Automotive Electric Association; Clayton Butterfield, of South Bend, Ind., and A. O. Teckemeyer, of the OPM priorities division, Chicago.

Service Volume Higher

Thirty per cent increase in service facilities of De Soto-Plymouth dealers throughout America during the past

six months was reported last week by L. G. Peed, vice-president of the De Soto Division of Chrysler Corp.

During the same period, actual service volume of De Soto dealers has increased approximately 20 per cent over the preceding six months' period, Peed said.

A large number of De Soto dealers also have inaugurated time payment plans for service work as a further help to owners, he added.

EASY BELT ADJUSTMENT



Here's an important and exclusive PAR feature . . . the "rocking" motor saddle. It's simple and convenient to compensate for belt stretch . . . by adjusting screws which rock the motor saddle to desired setting. It's impossible to misalign the motor on a PAR. That's another good reason why you will buy this air compressor!

By Comparison — You'll Buy

PAR

MODERN EQUIPMENT CORP.
DEFIANCE, OHIO, U.S.A.

"HOW TO BUY AN AIR COMPRESSOR" . . . a fact-filled catalog and check list — is yours for the asking. Write for your copy today!



**Is there a fast,
easy way to clean
garage floors?**

"YES!" says this Mid-West garage owner because Oakite Penetrant does the job for him quickly and economically. Here's why:

Hard scrubbing is out! Grease and oil deposits are quickly removed because of the rapid penetrating action of this hard-working material. A light brushing, followed by thorough rinsing, leaves floors clean . . . safe to walk on. Try it and see for yourself!

FREE! A 36-page cleaning manual, packed with performance-proved tips on how you can save time, money and effort. Write for YOUR copy today!

Manufactured only by

OAKITE PRODUCTS INC., 24C THAMES ST., NEW YORK, N. Y.
Representatives in All Principal Cities of the U. S. and Canada

OAKITE
Certified **CLEANING**
MATERIALS & METHODS FOR EVERY CLEANING REQUIREMENT

Cole-Hersee
serves
American Defense

WITH
Quality
ELECTRICAL
AUTOMOTIVE
EQUIPMENT
also

USED BY LEADING
CAR, TRUCK AND
TRAILER MANUFACTURERS AS ORIGINAL
EQUIPMENT.

Cole-Hersee Company
54 OLD COLONY AVENUE BOSTON, MASS.

SEND FOR
NEW
SUPPLEMENT



PICTURE OF A TIRED (BUT HAPPY) TRACTOR SALESMAN

Read This True Experience of One of Our Tractor Dealers!

"I had a date with one of the 'toughest' farmers in this county to demonstrate the new 60 tractor. His farm was only a few miles from town so I drove out there on the tractor.

"When I got to his field, we made a hitch on his plow and he said he wanted to try it. He no sooner hit the seat than he exclaimed about the comfort, and once he had driven that 60 down the field and back again he said, 'I want it—and I don't want you to take it back—I'll make a settlement with you right now, but you'll have to walk home.'

"Well, I walked home—and I was glad to do it. Frankly, I thought the 70 was the most sensational tractor that ever would be built—but the way this Oliver 1-2-plow 60 performs is *more* than sensational. When they see it work—they *want* it!"

Ever have an experience like this? You have if you've been *selling* all three—cars, trucks and tractors: sturdy Oliver tractors, of course. Oliver dealers know what it's like to have a tractor *sell itself*!

Inquire about your Oliver franchise at: 400 W. Madison Street, Chicago, Illinois.

SELL ALL 3
CARS-TRACTORS*-TRUCKS
***STURDY OLIVER TRACTORS—OF COURSE**

OLIVER
FARM EQUIPMENT COMPANY
400 WEST MADISON STREET • CHICAGO

Following is a brief digest of important articles appearing in this issue of MOTOR AGE. Read the digest and discuss procedure with your customers.

READY FOR TIRE RETREADING

With rubber production for civilian use curtailed, tire retreading and recapping shops face the prospect of busy days ahead. This shop is in an



enviable position to take full advantage of the opportunity. Some of the things it does to attract this type of work and to do it profitably should be helpful to any shop that hopes to get in on the market.

BASIC COURSE FOR MECHANIC TRAINING

Here is the start of a new series that will be useful both to the operator of a shop and his men. For the benefit of servicemen who must train beginners and of the beginners themselves, these articles go back to fundamentals. They treat the subject in an easy, conversational way that makes the subjects covered as interesting as they are important. With so many shops breaking in green men, these articles are timely and valuable.

SERVICE HINTS ON 1942 HUDSON DRIVE-MASTER

In line with the MOTOR AGE policy of giving the serviceman the first detailed data on new units, this article presents a complete service picture of the new transmission control unit developed by Hudson. It lists the minor adjustments the unit may need and describes the procedure necessary to make them.

A GOOD START ON STARTERS

Another in the series of discussions of electrical problems. This one gets down to cases on starters, describing the circuits and the common sources of trouble, and pointing out the easiest and best ways of correcting faults. Because electrical work is in increasing demand by owners, these articles



JOBBER'S OF THE DECEMBER

WHEN a serviceman gets time to think these days, one of the first things he realizes is that his business is a different proposition from what it was a few years or even a few months ago. His chief worry today is not getting business; most shops have as much as they can possibly handle or more. His present problems are obtaining parts, tools, and equipment, meeting tax bills that grow more burdensome each day, replacing men that go into the armed forces or defense industries. Naturally, his reading habits are changing. He wants facts and advice on new problems.

MOTOR AGE is fully aware of this shift in the interests of the serviceman. The accompanying digest of articles in this issue shows this clearly, for the articles deal with questions that are uppermost in the minds of servicemen.

Look them over. They'll give you a deeper insight into the thinking of servicemen and make conversation for a dozen visits with them.

are immensely popular with servicemen.

CUSTOMERS IN KHAKI

When the government erects a huge military camp in a sleepy country community and soldiers and officers bring in thousands of cars, it creates many problems, some tough, some humorous. Here is the entertaining sketch of what happened near one of the bigger Army camps in the East. It will give you a different slant on the boom in business that comes to shops near camps and big defense centers.

BRONZE WELDING FOR ENGINE BLOCK REPAIR

Because of the limited degree of heat required, bronze welding makes it possible to repair cast iron without danger of warping. This article, in



which each important step is illustrated, explains the correct method of repairing engine blocks.

DIGEST MOTOR AGE

HOW'S BUSINESS

A MONTHLY REPORT ON MAJOR ITEMS BY 500 JOBBERS

NOVEMBER, 1941

NATIONAL TOTAL	Good	Fair	Poor	NATIONAL TOTAL	Good	Fair	Poor
ACCESSORIES	Fair			SHOP EQUIPMENT	Fair		
Abrasives	80	95	13	Battery Charging Equipment	85	76	24
Anti-Freeze	138	29	21	Car Lifts	10	53	101
Car Radio Sets	10	29	67	Car Washers	4	35	119
Car Radio Accessories	9	30	60	Compressors	28	105	51
Chains	42	80	59	Drills (Electric)	60	107	26
Heaters	110	69	20	Electric Testing Equipment	35	85	65
Horns	14	69	90	Jacks	69	104	19
Lacquers	86	92	22	Lubricating Equipment	41	87	54
Oil Filters	127	78	11	Paint Spray Equipment	23	92	69
Oils and Greases	43	70	34	Tire Service Equipment	9	41	107
Polish	26	120	56	Tool Kits and Sets	61	71	47
Seat Covers	53	91	38	Valve Refacers	33	85	69
Thermostats	119	66	17	Wheel Aligners	27	58	85
	857	918	508	Wheel Balancers	39	53	78
REPLACEMENT PARTS	Good			Frame Straighteners	13	38	110
Axle Shafts	53	91	57	Headlight Testers	14	42	110
Ball and Roller Bearings	138	60	15	Welding Equipment	54	84	45
Brake Lining	142	66	10		610	1216	1179
Bushings	62	98	32	TIRES	Good		
Chains	41	110	52	Casings	24	23	6
Clutch Plates and Parts	124	66	14	Tubes	33	27	6
Fan Belts	155	64	9		57	50	12
Gaskets	169	38	9	ELECTRICAL UNITS	Good		
Gears (Rear Axle)	53	87	56	Armatures	83	109	17
Gears (Transmission)	63	94	40	Batteries	153	51	13
Mufflers	171	40	8	Cable (Battery)	136	78	11
Pistons	82	96	29	Coils	104	101	16
Pins	89	98	22	Other Ignition Parts	129	80	12
Rings	147	48	9	Fuses	93	114	14
Radiators and Cores	37	46	69	Ignition Wire and Cables	122	87	14
Spark Plugs	173	44	6	Lamps	130	83	9
Springs (Chassis)	40	83	44		950	703	106
Valves	104	89	13				
Water Pump Parts	151	45	11				
Engine Bearings	151	44	7				
	2145	1407	512				

MOST ACTIVE LINES

Positions of Leaders	Oct. 1941	Oct. 1940	Dec. 1940	Positions of Leaders	Oct. 1941	Oct. 1940	Dec. 1940
Spark Plugs	1	5	2	Ball & roller bearings	11	16	20
Mufflers	2	1	1	Cable (Battery)	12	13	12
Gaskets	3	2	8	Lamps	13	15	10
Fan Belts	4	4	9	Other Ignition Parts	14	14	14
Batteries	5	10	7	Oil Filters	15	7	19
Engine Bearings	6	3	11	Clutch Plates & Parts	16	11	18
Water Pump Parts	7	9	6	Ignition Wire & Cable	17	18	15
Rings	8	6	17	Thermostats	18		5
Brake Lining	9	12	13	Heaters	19		3
Anti-Freeze	10	8	4	Valves	20	20	

HOW ITEMS ARE RATED

"Most Active Lines" are chosen on the basis of the highest number of jobber reports indicating "Good" for the items selected among the twenty most active lines. "Activity" as used here has no bearing on volume, so the lists should not be interpreted as meaning the lines on which jobbers are enjoying the greatest volume. Most active lines are those which the greatest number of reporting wholesalers indicate are selling "considerably above normal" in their particular markets.

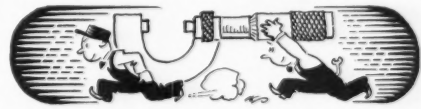
HOW TO READ THIS CHART

Information from which this chart is compiled is obtained monthly from a selected list of 500 wholesalers. Figures show the number of wholesalers reporting. Normal is taken as average sales for this month during the past few years.

Good—Sales considerably above normal.
Fair—Sales slightly above or below normal.
Poor—Sales noticeably below normal.

CAN YOU READ A MIKE?

This helpful piece is addressed to the younger mechanic and to the older man whose experience has not kept him in close touch with the precision



work that is so important today. The pointers given here prove that there is nothing difficult about using a mike once you get the hang of it.

BRAKE RELINING

Obtaining 100 per cent contact between shoe and drum is a matter of careful workmanship. These pictures of important steps in relining brakes show how the job is done to guarantee satisfactory results.

WINDOW REGULATOR REMOVAL

There's a job that can be sold an owner when the windows in the door of his car don't operate freely. All he has to be told is that this condition is likely to result in a broken window, as it will. The cause is often a damaged regulator. This yarn tells how regulators can be removed with the least amount of trouble and thus in the quickest time.

SUPER SERVICE MEANS COMPLETE SERVICE

You could cover a good deal of territory without finding a better argument for super service than the shop described in this article. It was started several years ago as a filling station that repaired tires and radios as sidelines. Then year by year it added new departments until today it is virtually an automotive department store. So far as the car owner is concerned, it offers complete one-stop service. Does it pay? Handsomely.

FRAME STRAIGHTENING DATA

As every wheel alignment man knows, it's impossible to obtain correct front-end adjustments when the



frame has been bent. Here, in clear, brief text and pictures, are full directions for bringing such a frame back into line.

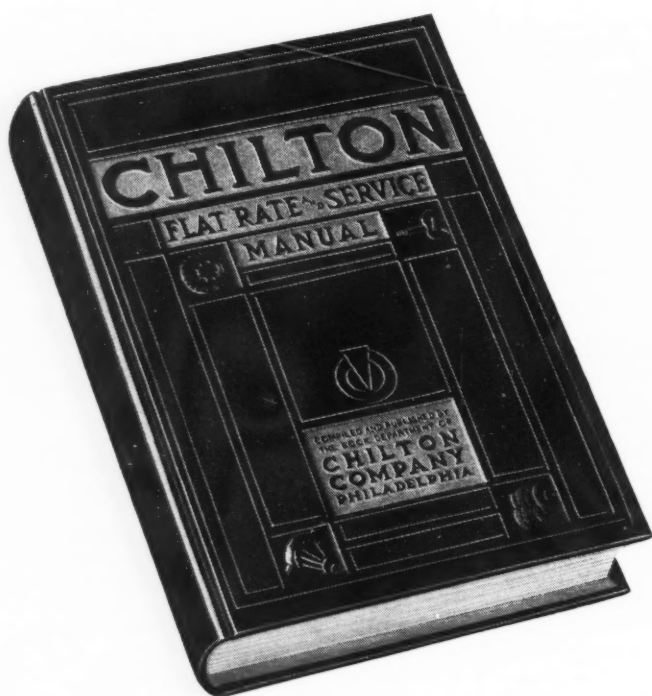
No Increase In Price

for the largest and greatest

CHILTON FLAT RATE and SERVICE MANUAL

The 1942 Edition *will supply:*

- All the latest facts and the 1942 prices
- 33% more Parts Prices
- 64 more pages of Service information
- 1942 models advance Parts Prices



- 105,000 parts on all makes and models
- 34,500 Body and Wreck Parts
- 45,000 Truck Flat Rate Labor Prices
- 390 Parts per car model
- 386 Truck Models
- 128 pages of Body Parts
- 44 pages of Body Flat Rate operations
- All prices changed to \$2 hour labor rate
- Entire Manual completely re-edited
- Over 1000 pages of material
- As always—the most accurate

Be sure the name CHILTON is on the Manual you buy

Rubber Consumption

Continues to Increase

October consumption of crude rubber by domestic rubber manufacturers was 60,418 long tons, according to statistics released by the Rubber Manufacturers Association, Inc. Consumption during October was 12.6 per cent above September and was 1.3 per cent above October a year ago.

Gross imports for October totaled 72,222 long tons according to the Department of Commerce. This represents a decrease of 13.1 per cent under September and is 3.3 per cent under October, 1940.

Total domestic stocks at the end of October, including Government reserves totaled 454,711 long tons. This is 4 per cent under Sept. 30 stocks, but is 93.20 per cent over the stocks estimated for Oct. 31, 1940.

Saginaw Men Shifted

The following appointments have been announced by C. E. Wilson, president of General Motors Corp.:

W. H. Doerfner, who has been general manager of the Saginaw Malleable Iron Division of General Motors Corp., becomes general manager of the Saginaw Steering Gear Division. Doerfner succeeds Alva W. Phelps, who has been appointed assistant general manager of the Electro-Motive Corp., at LaGrange, Ill.

LEONARD

Good news for every Truck & Bus Owner

PATENTED

Air Cooled

SPARK PLUGS



SPARK GAP CONTROL

AIR VENTS

HEAT CARRYOFF WIRE

ALL heavy duty Leonard Spark Plugs are now made with "Spark Gap Control," an exclusive Leonard feature that **MAKES FREQUENT REGAPPING UNNECESSARY!** Saves valuable time. Prevents loss of power.

A big boon to truck, bus and fleet owners. Instant acceptance. Quick sales. A volume builder for the live service station.

Send jobber's name if he can't supply you

LEONARD SPARK PLUG CO., INC., NEWARK, N. J.

Leonard **FLAT** electrodes with **SIDE-SPACING** prevent oxidation of firing points. Leonard **AIR-COOLING**, another exclusive feature, prevents insulator breakage.

THE MOST COMPLETE PASSENGER CAR AND HEAVY DUTY LINE

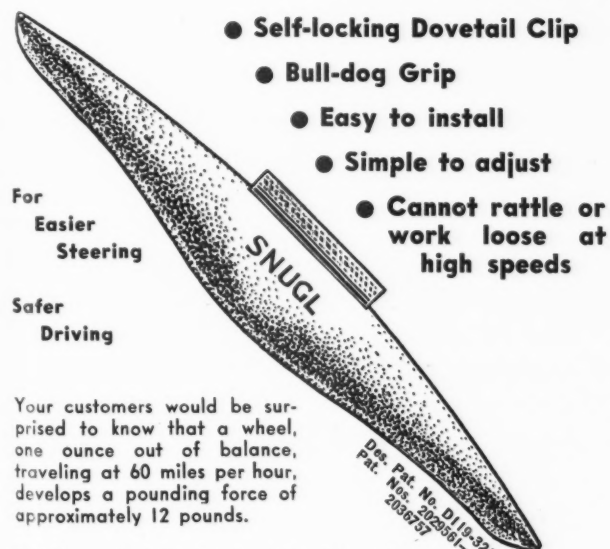
James H. Smith, who has been works manager of the Saginaw Malleable Iron Division, becomes general manager of the division.

Samuel W. Haley, who has been assistant works manager of the Malle-

able Iron Division, becomes works manager, succeeding Smith.

Doerfner, a native of Saginaw, has been with General Motors since 1918 and has been general manager of the Malleable Iron Division since 1938.

Snugl FADE-AWAY Balance Weights



- Self-locking Dovetail Clip
- Bull-dog Grip
- Easy to install
- Simple to adjust
- Cannot rattle or work loose at high speeds

Your customers would be surprised to know that a wheel, one ounce out of balance, traveling at 60 miles per hour, develops a pounding force of approximately 12 pounds.

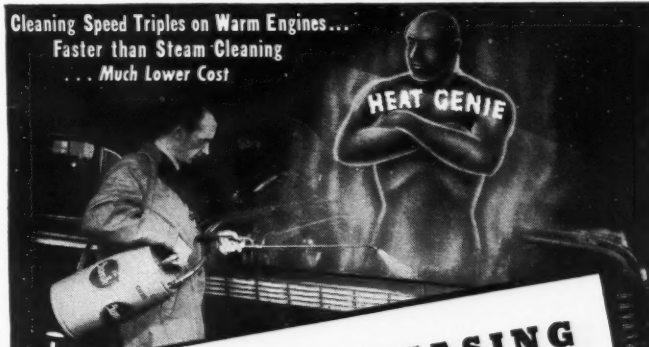
Tell them what to do about it. Show them Fade-Away Wheel Balance Weights. Easy to install. Fit Rims with or without Trim Ring. See your jobber or write to the factory for details.

MID-WESTERN AUTO PARTS

Manufacturers

824 East Elm Street, Kokomo, Indiana

Western Distributor: Kenneth V. Mills, 423 W. Eighth, Los Angeles, Calif.



HYDRO-DEGREASING
—Used Cars for Quick Resale
MUCH FASTER THAN STEAM CLEANING
... IF MOTOR BLOCK IS WARM
Spray It On . . . Hose It Off!

LIST PRICE \$3.00

1 Gallon Size
For Dealer Net Cost
... See Coupon

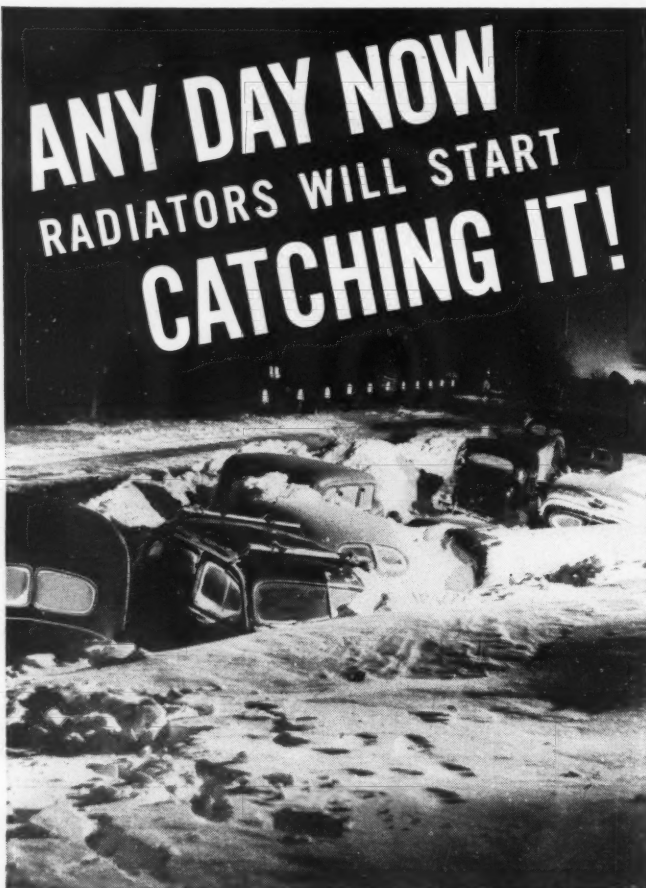
GUNK P-96 CONCENTRATE
General purpose garage and chassis degreaser. Dilute 9 parts low-cost kerosene . . . brush or spray on parts to be cleaned.



CURRAN CORP.
Mfg. Chemists
MALDEN MASS.

Not in stock at my jobber . . . attached to my Business letterhead is my check, or M. O. on the condition that you ship me a 1 gallon size GUNK at dealer's net cost \$1.75—(\$1.90 west of the Mississippi) by **FAST PREPAID AMERICAN EXPRESS**.

NAME _____
ADDRESS _____
CITY _____
STATE _____



**ANY DAY NOW
RADIATORS WILL START
CATCHING IT!**

Make Quick, Permanent Repairs with KESTER Radiator Solder!

WHEN Old Man Winter really starts to crack down, there's only one "must" in every repair shop—for quick, permanent, radiator repairs—and that's Kester Radiator Solder!

Automobile radiators take a lot of punishment! They're subjected constantly to wide extremes of temperature, but the 100% pure, virgin metal in Kester Radiator Solder enables it to withstand contraction and expansion. It resists bending, vibration and shock, too!

Repairs with Kester Radiator Solder are made in less time, because the more active flux and freer-flowing alloy are specially designed for radiator work. The flux is conveniently self-contained in the core of the solder.

Kester Cored Solders for all soldering jobs are great helps to shop profits. Keep them on hand always. Order from your jobber!

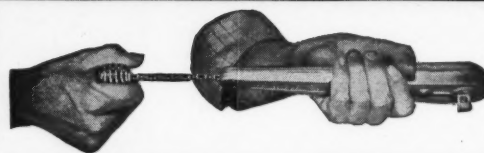
KESTER SOLDER COMPANY

4242 Wrightwood Avenue, Chicago, Illinois

Eastern Plant: Newark, N. J. Canadian Plant: Brantford, Ont.

**KESTER CORED SOLDERS
FOR EVERY AUTOMOTIVE USE**

SPEED-RATCH



**It has
ZIP-
ACTION**

removes or tightens nuts in a jiffy.

BEALL SPEED-RATCH is the new, improved Ratchet Wrench with patented pull-chain in handle. Quickly and easily tightens or loosens nuts at the hard-to-get-at spots—without finger manipulation. Saves valuable time in Auto Repair work. Satisfaction guaranteed. **ASK YOUR JOBBER or write us. List Price \$6.00**

BEALL TOOL COMPANY - - - East Alton, Illinois
Div. of Hubbard & Company

MAKE 2 PROFITS INSTEAD OF 1 WITH A B-L Supercharger

Rude Auto Company, Cedar Rapids, Iowa, one of America's best known car dealers, has B-L fast charged in excess of 2500 batteries in less than a year, quickly, safely, and economically, with an average "plus profit" sale per customer of \$5.00 including the \$1.00 for the recharge.

The increase in their battery charging business necessitated the purchase of another B-L Supercharger.

B-L Superchargers insure that double profit in "plus" service sales.

Don't delay! Place your order today!



THE BENWOOD LINZE CO.
ENGINEERS - MANUFACTURERS

1813 LOCUST STREET - - - SAINT LOUIS, MO.



U. S.
Pat. No.
1908694

You Don't Need a Hammer to Set Auto Glass!

Not If You Do It Like the Car Manufacturers!

Take a tip from car builders and set auto glass the easy way—with

EVERSEAL Channel Stripping

No pounding required—just a light hand pressure. Consequently there is never any glass breakage. It's quicker too—and insures a neater fit, absolutely water-tight because Everseal swells after it is set. Send today for a Free Sample to experiment with and see what an easy job it makes of glass setting.

EVERSEAL PRODUCTS CO.
3820 Hazelwood, Detroit, Mich.

**SEND
for
FREE
SAMPLE**



**STILL THE
BEST!**

Use WONDERWELD

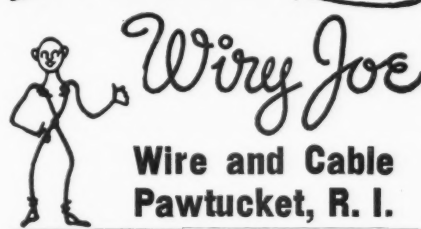
Quick Acting — Permanent

Wonder Weld is the perfect and guaranteed permanent seal for cracked blocks, cylinder and valve ports. Simple, easy, and profitable — takes only 30 minutes! Ask your jobber. * Send Trial Order * Or write for Folder.

MILLER MFG. CO.
1100 N. 32nd ST., CAMDEN, N. J.



TOP QUALITY.. LOW PRICE



**Wire and Cable
Pawtucket, R. I.**

THE DE LUXE HORN



These graceful, yet sturdily constructed deep-toned air horns are specially designed for moisture-proof, trouble-free service. Their vibrant, penetrating, yet melodious signal increases driving security through certainty of being heard. Sound range from 1 to 10 miles. Write for literature.

BUELL MANUFACTURING CO.
2973 Cottage Grove Ave., Chicago, Illinois

Play Safe! Use Only



PURITAN
The Genuine REFILL
BRAKE FLUID

Mixes with ALL Others

Distributed through N. A. P. A. Warehouses

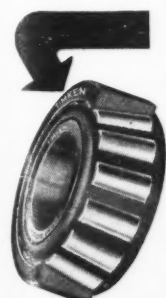
**SPARE PARTS
DOUBLE-QUICK**

That's how you get them when you specify "SHIP BY RAILWAY EXPRESS". Passenger train speed. Low, economical rates. For service, phone us. It pays.

— And —

For super-speed use AIR EXPRESS
3 miles a minute!

RAILWAY EXPRESS
AGENCY INC.
NATION-WIDE RAIL-AIR SERVICE



**YOUR ASSURANCE
OF CUSTOMER
SATISFACTION**
*Be Sure You
Get It . . .*

**THE TIMKEN ROLLER BEARING
COMPANY, CANTON, OHIO**

**Battery Manufacturers
Plan Materials Saving**

Declaring that the shortage of strategic raw materials may make it impossible to produce sufficient batteries for replacement needs, the Association of American Battery Manufacturers, Inc., at its recent convention at Chicago adopted a resolution calling on manufacturers to concentrate their production and sales on "those types of batteries that have longer life, better performance, and maximum user value." Thus, declared the resolution, the industry can make the most effective use of available raw materials.

B. F. Morris, of Thomas A. Edison, Inc., was reelected president for the 1942 term. Other officers and directors are:

E. T. Foote, first vice-president; J. H. McDuffee, second vice-president; A. H. Daggett, secretary; L. A. Doughty, treasurer; O. V. Badgley, A. J. Baracree, H. C. Montgomery, Lester Perrine, Ward Perry, and L. B. F. Raycroft, directors.

Zone Managers Shifted

Appointments affecting managerial duties in several zones throughout the nation have been announced in Lansing, by H. A. Trevellyan, Oldsmobile's general sales manager.

L. L. Linehan, zone manager for Oldsmobile in Oakland, Cal., has been named zone manager in New York City. Linehan succeeds J. H. Lemons promoted last week to assistant general sales manager for Oldsmobile in charge of eastern sales.

Russell Leshner, veteran member of the Oldsmobile wholesale organization and zone manager in Cincinnati, has been transferred to a similar post in Oakland. Joseph H. Folsom has been promoted from assistant to zone manager for Oldsmobile in Cincinnati, succeeding Leshner.

O. C. Farnsworth, assistant zone manager in Pittsburgh, is transferred to assistant zone manager in Cincinnati. He is succeeded in Pittsburgh by Edwin N. Prugh, Jr., formerly assistant manager in the Atlanta zone. C. R. Bonnett, assistant in Charlotte, N. C., becomes assistant zone manager in Atlanta.

THERE'S ONLY ONE

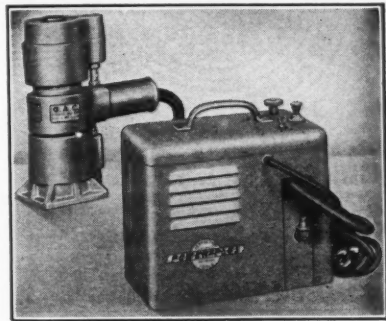
**BURN-OUT PROOF
DIRECTIONAL SIGNAL SWITCH**

In complete sets of Signal-Stats or as a replacement switch—ASK YOUR JOBBER

SIGNAL-STAT CORPORATION
68 JAY STREET BROOKLYN, N. Y.

**The
SPEED
POWER
STRENGTH
FLEXIBILITY**

of these
**G.A.C. PRODUCTS
MAKE MONEY FOR YOU**



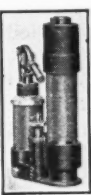
**TWO-SPEED, TWIN CYLINDER
POWER UNIT**

High speed pumps quickly force ram to contact load, then automatically cut out and powerful slower speed pumps lift load. Uninterrupted flow of power to ram.

**H-289
UNIVERSAL
FENDER
SPREADER**



For close work where wide spreading is necessary and for spreading between fender and fender well. Closes to 1 3/4". Opens to 19 3/4" with 6" ram travel. \$14.75.

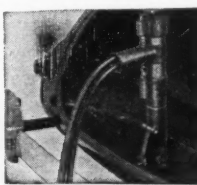


**The only Double-Acting
Push-Pull
HYDRAULIC JACK**

Supplies direct pull, for the repair of box channels, rear trunk racks, door posts, etc. Two units handle any type of body aligning, frame-work, fender straightening, knee-action adjustment, steel running-board straightening.

Operates in any position, even upside down. Safety valve prevents overloading, bending or breaking.

**Power In a Small Area
H-80
PUSH-PULL
SPREADER**



For use with Perfection Push-Pull Jack. Ideal for trunks, pushing out sills, etc. Fits into 1" space. Open width 5 1/2", \$9.25.

Order from your jobber or write for catalog
G. A. C. MFG. CO., Ashland, Ohio

BLUE CROWN
SPARK PLUGS



FINNED SHELL SAVES GAS

Ask your Jobber
MOTOR MASTER PRODUCTS CORP.
4757 Ravenswood Ave., Chicago, U.S.A.
Export Distribution
Borg-Warner International Corp., Chicago

**QUICK SERVICE MEANS
PLEASED CUSTOMERS**

And both mean bigger business. So why take chances? Specify fast RAILWAY EXPRESS on your replacement and stock orders. Low rates. High speed all the way, with pick-up and delivery at no extra charge within our regular vehicle limits in all cities and principal towns.

RAILWAY EXPRESS
AGENCY INC.
NATION-WIDE RAIL-AIR SERVICE

Yellow Coach Net Up

Irving B. Babcock, president, Yellow Truck and Coach Manufacturing Co., has announced that the net sales of the company for the quarter ended Sept. 30, were \$68,335,693. The consolidated net income for the third quarter of 1941 amounted to \$9,633,093, before provision for income and excess profits taxes. After deducting income and excess profits taxes of \$6,918,134, consolidated net income amounted to \$2,714,959. This compares with net sales of \$18,581,088 and net income of \$785,760 for the third quarter of 1940, after deducting \$319,697 for federal income taxes.

For the first nine months of 1941 net sales were \$159,707,285 and consolidated net income amounted to \$22,639,486, before provision for income and excess profits taxes. After deducting income and excess profits taxes of \$16,024,204, consolidated net income amounted to \$6,615,282. This compares with net sales of \$58,250,701 and net income of \$3,506,869 for the corresponding period of 1940, after deducting \$1,091,697 for federal income taxes.

Bell, MacDonald Named

Willys Sales Chiefs

Joseph W. Frazer, president of Willys-Overland Motors, has announced the appointment of George Harold Bell and W. A. MacDonald as directors of sales for the eastern and western sections of the country respectively.

Bell, who for 10 years served in various executive capacities with General Motors, has been assistant sales manager of Willys since February, 1939. MacDonald, who was formerly vice-president in charge of sales for Hupp Motor Car Corp., has been assistant to the president in charge of Pacific Coast operations since February, 1941.

Purolator Buys New Plant

Increase in after-market sales, through dealers, accounts for the purchase of a new plant by Purolator Products, Inc., Newark, N. J. The new plant is located in Newark, near the company's main office and factory.

Without the increase in dealer sales, Purolator's American facilities, operating three shifts a day, would have been ample to produce the requirements of the Government defense orders in addition to previous dealer requirements.

Ramsey Buys New Plant

As part of an expansion program, Ramsey Accessories Manufacturing Corp., St. Louis, Mo., announces the recent purchase of a new piston ring plant at Fruitport, Mich., which is already operating at full capacity.

In announcing the new plant acquisition, J. A. Ramsey, president of Ramsey Accessories Manufacturing Corp., says, "This marks the fifteenth major move or addition to our plant facilities since 1922, to keep up with increasing demand for our products. We believe this plant is practically 'made-to-order' for us.

"With our up-to-date three-story plant in St. Louis and this new addition, we expect to more than double Ramco piston ring production figures."

Philco Sales Up

Consolidated gross sales of Philco Corp., exclusive of its Canadian subsidiary, amounted to \$19,681,520 in the third quarter of 1941, as compared with \$15,417,352 in the corresponding period last year, it has been announced by James T. Buckley, president.

Earnings in the quarter amounted to \$733,939, after provision of \$1,125,000 for federal and state income taxes and excess profits taxes. After taxes these were equivalent to 53½ cents per share on each of 1,372,143 shares of common stock outstanding, as compared with 53 cents a year ago, if the number of shares had been the same.

STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, ETC., REQUIRED BY THE ACTS OF CONGRESS OF AUGUST 24, 1912, AND MARCH 3, 1933

Of MOTOR AGE, published monthly at Philadelphia, Pa., for October 1, 1941.

State of Pennsylvania }
County of Philadelphia } ss.

Before me, a notary public in and for the State and county aforesaid, personally appeared Jos. S. Hildreth, who, having been duly sworn according to law, deposes and says that he is the Business Manager of the MOTOR AGE and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, as amended by the Act of March 3, 1933, embodied in section 537, Postal Laws and Regulations, printed on the reverse of this form, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers are: Publisher, Chilton Company, Chestnut & 56th Sts., Phila., Pa.; Editor, W. K. Toboldt, Route 1, Chester Springs, Pa.; Managing Editor, J. Edward Ford, Drexel Court, Drexel Hill, Pa.; Business Manager, Jos. S. Hildreth, 63 Overhill Rd., Bala-Cynwyd, Pa.

2. That the owner is: (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding one per cent or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a firm, company, or other unincorporated concern, its name and address, as well as those of each individual member, must be given.) Chilton Company, Chestnut & 56th Sts., Philadelphia, Pa.

Holders of more than 1% of the capital stock outstanding of Chilton Company: C. A. Musselman, 260 Sycamore Ave., Merion Station, Pa.; J. S. Hildreth, 63 Overhill Rd., Bala Cynwyd, Pa.; G. H. Griffiths, 165 Montclair Ave., Montclair, N. J.; Charlotte M. Terhune, 160 E. 48th St., New York, N. Y.; John Blair Moffett, Fishers Rd., Bryn Mawr, Pa.; C. S. Baur, 69-11 Yellowstone Blvd., Forest Hills, N. Y.; J. H. Van Deventer, 12 Phillippe Place, Yonkers, N. Y.; P. M. Fahrendorf, 19 Tunstall Rd., Scarsdale, N. Y.; Mary M. Acton, 260 Sycamore Ave., Merion Station, Pa.; Mabel M. Musselman, 260 Sycamore Ave., Merion Station, Pa.; Dorothy S. Johnson, 1327 N. Greenway Drive, Coral Gables, Fla.; Anne E. Tomlinson, c/o Bankers Trust Company, P. O. Box 704 Church Street Annex, New York, N. Y.; Ethel G. Breen, Trustee u/w of Charles W. Anderson, 51 East 42nd St., New York, N. Y.—Beneficiaries: Robert C. Anderson, Percival E. Anderson, Charles W. Anderson, Jr., Annie L. Clark; John Blair Moffett, 1608 Walnut Street, Philadelphia, Pa.—Agent for J. Howard Pew, J. N. Pew, Jr., Mable P. Myrin, Mary Ethel Pew; Elizabeth J. Bailey and Ellwood B. Chapman. Trustees Estate of James Artman, Deceased, 930 Real Estate Trust Building, Philadelphia, Pa.—Beneficiaries: Franklin Artman, Vera Watters, Alvin C. Artman, Elizabeth J. Artman, Marion A. Pratt, George H. Pratt, by assignment, Edwin Moll, by assignment; Bankers Trust Co., and Wilfred T. Pratt as Trustees u/w of Eugene Sly F. B. O. Beulah B. Sly, P. O. Box 704, City Hall Station, New York, N. Y.

3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are: (If there are none, so state.) None.

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him.

5. That the average number of copies of each issue of this publication sold or distributed, through the mails or otherwise, to paid subscribers during the twelve months preceding the date shown above is (This information is required from daily publication only.)

JOS. S. HILDRETH, Pres. & Business Manager.

Sworn to and subscribed before me this 22nd day of September, 1941.

BESSIE F. HAMMOND

(My commission expires January 7, 1945.)

[SEAL.]

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reaches the leaders—
goes to the finest service establishments. Its circulation is hand-picked by experienced field service circulation men. 72.08% of its subscribers renew on expiration.

A CHILTON Publication



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PHILADELPHIA, PA.

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Ask your jobber or write us for details on complete line

HEIN-WERNER MOTOR PARTS CORP.
Waukegan, Wisconsin

OUTSTANDING

performance in the
Automotive Industry



Compressed Air Contest

The Compressed Air Institute announces a nation-wide contest for industry, scheduled to start Dec. 1. The contest is to continue for six months, closing June 1, 1942. Fourteen cash awards will be given. These comprise a first prize of \$100; three \$50 prizes and ten of \$25, and as many additional awards of \$25 as there shall be contestants who submit material acceptable for use in technical journals.

Virtually no restrictions are placed upon the eligibility of contestants. Nor is the subject matter of their presentations limited other than it be concerned with some use or phase of compressed air. The contest is open to any employee of any organization using or associated with compressed air in any department. The only exceptions are executives of companies comprising the Institute.

Contest announcements for bulletin board display are available for any shop or office in the United States. They are available on request to the Institute's Educational Director, Russell Gross, by addressing his East Orange, N. J., office.

R. B. Cave Picked to Head Penna. Rubber Co. Sales

John A. Seubert, vice president of the Pennsylvania Rubber Co., Jeanette, Pa., announces the appointment of R. B. Cave as general sales manager.

Cave was formerly assistant sales manager of the Merchandising Division of the Electric Auto-Lite Co., Toledo, Ohio.

Osborne Is Honored by Sales Training Group

David R. Osborne, director of sales training of The Studebaker Corp., has been elected vice president of the National Society of Sales Training Executives. The meeting was held late last week at the Westchester Country Club and was attended by sales educators from all parts of the country. Osborne was a charter member of the organization. Besides Osborne, two representatives of the automotive industry were present. They were Harry G. Moock, of Chrysler, and J. H. Dowling, of Chevrolet.

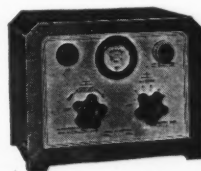
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Until You Have Invested The VALLEY SUPERDUTY CHARGER

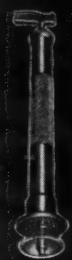
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Model SG-12 charges 1 to 12 6 volt batteries—\$28.00.

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Wheel Bearing Washer and Packer
Simple, practical, convenient, efficient, low-cost.



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Bryan, Ohio

For running-in new and rebuilt engines use auxiliary lubricants containing "dag" Brand colloidal graphite.

Acheson Colloids Corporation

Port Huron



Michigan

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7" PORTABLE ELECTRIC SANDER

High speed, general purpose sander. For metal finishing, removing scale and rust, smoothing welds.

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ELECTRICAL TOOL CO.
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PERMAG Cleaning Compounds

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Concrete floors, pits, walls, motors, parts, trucks, radiators—clean quickly, efficiently.

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HAMMOND Established 1873 INDIANA

Handy

RECT-O-LYZR

FAST CHARGER
Accurately tests each cell SEPARATELY and charges fast and SAFELY at automatically tapered rates —without removing battery from car. Price complete, **\$210.00**

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MAIL COUPON
FOR *Free* MONEY SAVING CATALOG...



WAYNE AIR COMPRESSORS

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ADDRESS
CITY..... STATE.....
The Wayne Pump Co., Ft. Wayne, Ind.

P. O. B. Manufacturing Co. Reorganization Completed

The P. O. B. Manufacturing Co., Inc., Cincinnati, Ohio, well-known to the automotive trade through its "Perfect-Seal" gasket sealer and "Stiktite" door and window sealing material has been completely reorganized and is operating under entirely new management.

In March, 1940, the financial condition of the company forced it to seek relief under the provisions of The Chandler Act.

Under the trusteeship, the company showed such progress, that a number of the larger creditors, believing in the future possibilities of the business, under proper management, submitted a proposal to the court which was approved.

On Oct. 24, a meeting of the new company stockholders was held, and the following were elected to the board of directors: John P. Weber, president of John P. Weber Printing Co.; James H. Cleveland, former U. S. District Attorney; Stanley A. Hittner, certified public accountant; James Gardner, plant manager of P.O.B. Mfg. Co.; Howard H. Scarff, who has been acting as general manager under the trustee, and Robert M. Fleming, vice president of Harry M. Miller, Inc., advertising agency.

The board in turn elected Weber, president, Scarff, vice president and general manager, Hittner, secretary and treasurer.

Food for British

Employees of the Vellumoid Co., of Worcester, Mass., are sending a surprise gift of foods and candy, packed with a war-time shipment of Vellumoid packing, to employees of Chilcotts, Ltd., distributors of Vellumoid products in England. Soups, sugar, shortening, evaporated milk and hard candies for the children were purchased with employee contributions in enthusiastic response to the idea conceived by Frank L. Barnes, die maker and Yankee Division veteran of the last war. The food is packed in regular Vellumoid Packing Cases, and will accompany two shipments on different transports.

Arc Welding

"Practical Lessons in Arc Welding" is the title of a new booklet by W. J. Chaffee, published by Hobart Bros., Troy, Ohio. It is patterned after the course of lessons offered in the Hobart Trade School, and leads the student easily throughout all the fundamental stages of arc welding. Forty-two complete arc welding lessons are covered in the book. Price, 50 cents.

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Industry depends on...

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GASKETS, OIL SEALS, GREASE RETAINERS

Jim Asbestos says:

Now is the time when football experts pick their All Americans—and when brake experts pick their All-American brake lining for tough winter driving. To smart servicemen everywhere, that means

The Lifesaver of the Nation's Highways
JOHNS - MANVILLE BRAKE LININGS

Clean as a Rifle Barrel!

RIMAC

VALVE GUIDE BRUSHES

A few up and down strokes—and every trace of carbon is removed with Rimac Valve Guide Brushes. No scratching. One handle with solid steel shank takes all sizes. Only 5 sizes fit 90% of all cars and trucks. SET No. HB-5, net \$2.25.

RINCK-McILWAINE, INC.
16 HUDSON ST., NEW YORK, N. Y.



Send for Rimac Catalog

KEX TIRE PLUGS

Dynamic Hole Stoppers For Punctured Casings. A few CENTS spent now will save DOLLARS and TIRES. More miles per tire is patriotic economy. KEX are more miles convenient to carry for instant use. 3 sizes meet all needs. Automotive Stores and Wholesale Sellers Sell KEX.

The WEDLER-SHUFORD CO.
ST. LOUIS, MO.



Stems are compressed into needle point quill.

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COOLING
SYSTEM
SERVICE**

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PROFITABLE
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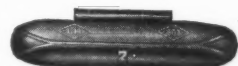
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at 50 below
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lubricates, pro-
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sortments of fast-
moving parts . . .
Contact Points . . .
Condensers . . .
Rotors . . . Caps
Coils . . .
Switches, etc.

SHURHIT PRODUCTS, INC.
Waukegan, Ill.

Niehoff Launches

"Save Your Car" Drive

So dealers and jobbers in every part of the country can tie in with national defense, C. E. Niehoff and Co., of Chicago, is introducing a free "Care Will Save Your Car" campaign.

Windshield stickers, poster stamps, lapel buttons, and wall streamers afford a complete, rounded-out program that crystalizes, in one slogan, the purpose of automobile maintenance during the present period of national emergency.

By bringing to the attention of their customers these colorful red-white-and-blue sales reminders, deal-

★ ★ ★ ★ ★ ★ ★ ★ ★ ★
CARE WILL SAVE YOUR CAR
Use NIEHOFF IGNITION PARTS

ers stand a good chance of getting many straight requests to put their customers' cars in first-class condition.

Any dealer or jobber interested in this campaign can get complete information by writing direct to C. E. Niehoff and Co., 4925 W. Lawrence Ave., Chicago.

Factory Sales Show

Decline in September

Sales by American factories of all passenger cars and trucks for September totaled 234,255, according to figures released by the Bureau of the Census. This figure compares with 269,108 for the corresponding month last year.

Of the September, 1941, factory sales, 167,790 were passenger cars, and 66,465 trucks.

The nine-month total for 1941 was 3,821,978 cars and trucks, compared with 3,005,212 for the first nine months of 1940.

Canadian production for September this year was 2,548 cars and trucks, compared with 3,410 last year.

Weiss Joins C.I.T.

Harry Weiss, who resigned as president and director of National Bond and Investment Co., Chicago, has been elected a vice president of C.I.T. Corp. His headquarters will be at the Chicago offices of C.I.T. at 333 North Michigan Ave.

YOUR "BUGGY" WOULD MAKE IT TOO IF YOU COULD LINE WITH—

**SOUTHERN
BRAKE LINING**

SOUTHERN
FRICTION MATERIALS CO.-CHARLOTTE, N.C.

**BOTH You and
Your Customers
PROFIT with
FEL-PRO
GASKETS!**



Exclusive Fel-Pro soft-faced construction seals without distortion—insures customer satisfaction. Packaged in boxes and sets for easy handling and less labor costs.

Write for Complete Gasket Catalog! **FELT PRODUCTS MFG. CO.**
1510 W. Carroll Ave., Chicago, Ill.

TRADE MARK
NOC-OUT
HOSE CLAMPS

**THE HOSE CLAMP
WITH THE
THUMB SCREW**



For fast, dependable hose connections, use NOC-OUT Hose Clamps . . . standard in the automotive industry for many years for their leakproof, trouble-free sealing features. Quick tightening thumb screw provides equal pressure all around. Type "A" Adjustable . . . fits many hose sizes. Type GBB heavy duty, solid band for Booster Brakes. GSHH for all heater hose. Type HP for all high pressure air and gas lines. Sold by dealers and jobbers everywhere.

WITTEK MFG. CO.
4305 W. 24th PL., CHICAGO, U.S.A.

FOR THE OIL GASOLINE & WATER CONNECTIONS

VELLUMOID

VELLUMOID GASKETS

VELLUMOID Gaskets and Sheet Packing meet exacting defense requirements. They make tight connections which stay tight.

Sold through Jobbers. The Vellumoid Co., Worcester, Mass.

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